



Missouri Department of Natural Resources



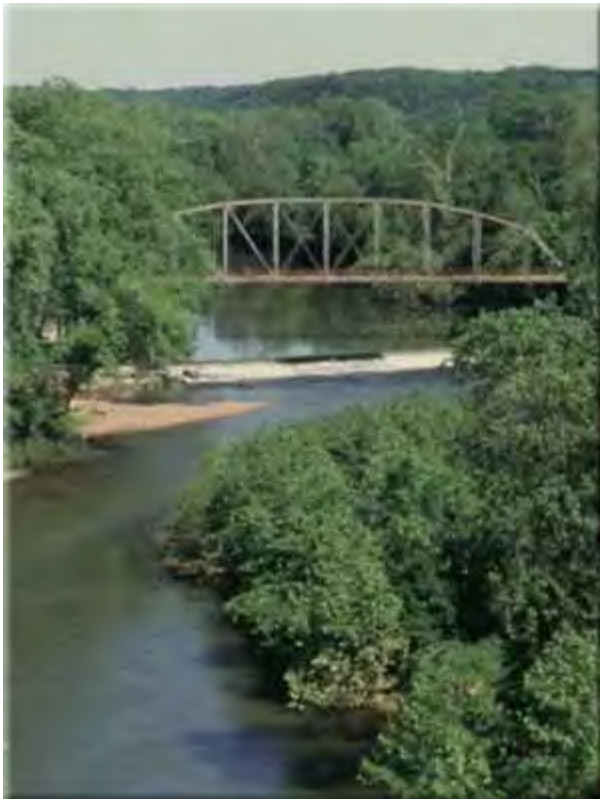
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Integrated Strategic Plan

Missouri Department of Natural Resources

October 1, 2000



(Above) Front Cover: The old Highway 185 bridge in Washington County spans the Bourbeuse River near Noser Mill.

Photo by Nick Decker.

Vision

The Department of Natural Resources envisions a Missouri where people live and work in harmony with our natural and cultural resources, make decisions that result in a quality environment, and prosper today and in the future.

Mission

The mission of the Department of Natural Resources is to preserve, protect and enhance Missouri's natural, cultural and energy resources and to inspire their enjoyment and responsible use for present and future generations.

Values

We take seriously our responsibility of stewardship to protect and enhance the environment in which we work and live, and will consider all aspects of the environment when making decisions. To do this we value:

- Integrity above all
- Openness to all individuals and points of view
- Diversity in people and approach
- Excellence in all we do
- Service

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(Left) Back Cover: Snow dusts the treetops and banks along Cedar Creek as the stream winds its way through Mark Twain National Forest in central Missouri. The creek begins north of Interstate 70 and runs along the border between Boone and Callaway counties before emptying into the Missouri River.

Photo by Nick Decker.



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Integrated Strategic Plan - October 1, 2000

Strategic Issue 1

Missouri's Water Resources

Missouri's surface water resource

Missouri's water quality is of vital concern to everyone who lives in Missouri. The term "water" encompasses both the water in our streams, lakes and rivers, or surface water; and that flowing below the surface, or groundwater. Currently, 52 percent of our streams and 94 percent of our lakes meet federal water quality standards. The remaining are classified as impaired water bodies, meaning they do not meet one or more water-quality standards. The standards address whether water is suitable for drinking, swimming, livestock watering and supportive of aquatic life. Of the 10,489 stream miles that do not fully meet water-quality standards, approximately 10,012 miles show impacts from chemicals or the physical condition of the water, and 228 miles do not support aquatic life.

Most of Missouri's 292,204 acres of lakes fully support aquatic life. However, approximately 117,000 lake acres are threatened by eutrophication, the nutrient enrichment of a water body that leads to increased algae growth. About 42,660 lake acres are impaired by herbicides or discharges from upstream dams.

The Federal Clean Water Act requires states to list impaired water bodies, where existing water pollution control procedures cannot correct the associated problems. These water bodies are required to have a Total Maximum Daily Load (TMDL) study. This will aid in the determination of how much pollutant a water body can assimilate without impairing water quality. This will then be included in the permitting process for that water body.

Successful implementation of water quality improvements will depend on support and coordination with all affected parties. Many of these groups have not been involved with regulation of water quality in the past. This fact, coupled with the new approach TMDLs provide, heightens the need for communication, coordination and support.

Missouri Water Quality Standards are the foundation and provide the justification for our National Pollutant Discharge Elimination System permit program. Standards are required by federal law to be reviewed at least once every three years and are subject to U.S. Environmental Protection Agency (EPA) approval. The Missouri Department of Natural Resources (DNR) plans to comprehensively review the Missouri Water Quality Standards and propose changes to the Missouri Clean Water Commission.

Some items to be addressed in the next review are the criteria for metals and ammonia to prevent aquatic toxicity, bacterial criteria to protect recreational uses of water, application of groundwater limits, additional designation of outstanding national resource waters, specific biological criteria and flow maintenance below dams.

Missouri's major rivers provide drinking water for millions of our citizens, flyways for migratory birds, an international attraction for tourists and a strong economic corridor. The department protects Missouri's major river resources by advocating our interests to various river basin associations, interstate water groups and the U.S. Army Corps of Engineers. The department actively monitors proposals and changes to the Missouri River Master Manual that controls



management of the Missouri River and operation of six main stem reservoirs. The department also participates in associations that actively address issues involving other major rivers flowing into or out of the state of Missouri, such as the Mississippi River, and their associated benefits and impacts.

DNR has increased the availability of river and stream flow information by increasing the number of river gauging stations positioned at strategic locations across Missouri. This information is critical to Missouri's efforts to monitor surface water availability to ensure adequate supplies for designated uses and protect our citizens from flood risk. Water uses include, but are not limited to, drinking water supplies, wildlife habitat, recreation, river commerce and thermal cooling.

Missouri's groundwater resource

During 1999, 65 percent of all reported or known wells met state standards. Following proper construction standards ensures that the groundwater resources of the state are protected from poorly constructed wells that could serve as direct conduits for pollutants to enter groundwater supplies. Wells regulated include private water supply wells, exploration wells, monitoring wells, underground injection wells, and oil and gas production wells. Some wells drilled go unreported and their compliance with standards is uncertain. A challenge is to ensure that all wells are reported and certified as constructed within standards to maintain or improve our groundwater quality.

Increasing the number of groundwater monitoring stations from 46 to 70 has made major improvements in Missouri's knowledge of groundwater trends and impacts to our groundwater resources. Groundwater data can now be obtained on a daily basis through the use of satellite telemetry that relays the data. This information is then made available through the Internet. This data is used to make sound decisions about the use and protection of groundwater.

Missouri's public drinking water systems

The DNR also regulates all public water systems to ensure water supplied to the public is safe to drink. In 2000, 97.7 percent of Missourians were provided drinking water that met government standards. In Missouri, 2,760 active public water systems supply drinking water. The remainder of the population is served through private wells. For public water systems, DNR tests for as many as 90 different regulated chemicals. Monitoring frequency ranges from monthly to once every four years, depending on the characteristics of the contaminant and how vulnerable the source is to contamination. Many public water systems perform testing beyond that required by the state.

In fall 2000 or soon after, EPA will add new contaminants to regulate or significantly expand the regulation of existing contaminants to protect our drinking water and thus our health. Missouri will have to adopt these technical requirements in state rules or lose primacy. Primacy means EPA has delegated authority to DNR as the primary regulatory agency.

Protect and enhance the quality and quantity of Missouri's water resources.

Outcome A

Improved protection of Missouri's water resources (Show-Me Result)

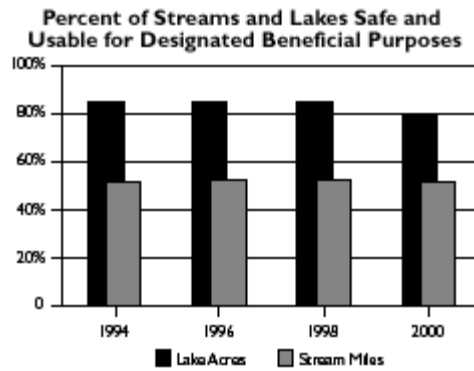
Outcome Measure Percent lake acres and stream miles that are safe and usable for the designated beneficial purposes

Objective 1

By 2005, increase compliance with minimum water-quality standards for: 18.4 stream miles out of 275.9 stream miles polluted by animal waste, active and abandoned mine lands, domestic point-source discharges, and industrial discharges; and 3,012 lake acres out of 4,566 impaired lake acres.

Objective Measure

Number of stream miles and lake acres returned to compliance with water-quality standards



Strategies

- Implement the Conservation Reserve Enhancement Program to improve drinking water quality, protect public health, enhance wildlife habitat and effectuate the conservation of soil and water on the agricultural cropland in the watersheds serving 58 public drinking water supplies in 36 counties.
- Comprehensively review the Missouri Water Quality Standards and propose changes to the Missouri Clean Water Commission.
- Issue grants and low-interest loans to assist in the construction of domestic wastewater and animal waste facilities.
- Broaden public education and provide training to increase the technical competence of Stream Team volunteers, which will improve the quality of the monitoring data available to technical staff.
- Provide protection of wetlands through purchase of wetland acreage when effective and appropriate for inclusion in the state park system.
- Develop a comprehensive and long-range program for state parks and historic sites to comply with environmental regulations and codes for public providers including preventative maintenance for water and wastewater systems.
- Remediate abandoned coal and metallic mineral mine lands to reduce water-quality impacts.
- Through the Special Area Land Treatment program for soil conservation within watersheds, work with landowners to implement Best Management Practices and establish agricultural landowner nonpoint-source projects.
- Prevent stream degradation by decreasing the runoff, sediment transport, nutrient leaching and the increased stream temperatures following timber harvest for chip mills, with the application of Best Management Practices.
- Conduct Total Maximum Daily Load studies to identify both point- and nonpoint-sources of pollution and facilitate the restoration of our rivers, lakes and natural aquatic habitats.
- Conduct special water-quality studies to assess source impacts and to better understand the interaction between pollutants and the aquatic environment.
- Develop and propose to the Clean Water Commission numeric biological criteria as a water-quality standard in order to identify better those impacted streams incapable of supporting the expected biological community.
- Conduct water-quality monitoring and assessment to ensure appropriate and timely treatment of waters that are showing deterioration regarding the desired changes in water quality or its beneficial use support.
- Implement Clean Water Commission directives to initiate the following rulemaking: water-quality standards for phosphorus, land-application standards for phosphorus, and permitting requirements for contract haulers for both poultry litter and other types of manure.
- Process permit applications for discharges to waters with impaired water quality and incorporate Total Daily Maximum Load plans into permits such that the permitting program ensures the reduction of pollutants into impaired streams.
- Incorporate pollution prevention measures into the permitting process as an effective means to reduce physical and chemical degradation of streams.
- Amend the permitting and certification processes to: improve the readability and

enforceability, streamline the procedures, incorporate public comments, resolve technical problems and increase the frequency of inspections.

- Ensure that Missouri water quality meets standards and laws, through permitting, inspection and enforcement efforts. When necessary and appropriate for protection of our natural resources, promulgate new rules.

Objective 2

Continue efforts that proactively seek means to protect or enhance water quality.

Objective Measure

These efforts all support the outcome of improved water quality – and that outcome measure is the true measure of success for proactive programs.

Strategies

- Maintain interagency coordination and cooperation through the Water Quality Coordinating Committee, the Missouri Watershed Information Network, state and federal agencies, natural resources interest groups and private citizens.
- Promote the use of Environmental Management Systems to improve environmental performance by the regulated community.
- Working with our partners in the White River Basin, such as the James River Partnership, the cities of Springfield, Branson and Kimberling City, local, state and federal agencies, the Arkansas Department of Environmental Protection and the Arkansas Soil and Water Conservation Commission, implement initiatives to improve water quality in the basin.
- Provide owner- and operator-training and technical assistance to improve performance and compliance of regulated facilities.
- Support multi-agency efforts to encourage application of Best Management Practices in the watersheds of drinking-water lakes impacted by farm herbicides.
- Continue Nonpoint-Source Plan implementation by supporting community-based watershed water-quality projects.
- Update and revise design regulations and standards for Concentrated Animal Feeding Operations including incentives for technology that will meet both water-quality and air-quality standards.
- Assess the environmental impact of chip mills on the water quality of the state as well as the forest products industry, tourism and recreation industry.

Objective 3

Maintain the supply of water for major river basins for beneficial uses.

Objective Measure

River flow at St. Charles/St. Louis, St. Joseph/Kansas City gauges

Strategies

- Advocate positions that protect Missouri's interests through participation in river basin associations.
- Annually review reservoir operational plans as they impact hydropower generation, water supply and other beneficial uses.
- Locate stream gauges to monitor low-flow levels on the Middle Mississippi River.
- Participate with technical and policy committees that may impact the White River.
- Monitor the activities and decisions of other states and the Corps of Engineers as they relate to water flow on major rivers and streams in Missouri.
- Improve the accuracy and reporting of flood/river stage information.
- Monitor proposed changes in the Missouri River Master Manual as they impact Missouri's flood control benefits, drinking water supplies, river commerce and environmental and recreation needs.
- Participate with the State Emergency Management Agency to activate Missouri's Drought

Response Plan when conditions are dry.

- Determine present land-use patterns for major river corridors, including agricultural, wetlands, commercial and recreational.
- Develop remote sensing capability for use in natural resource inventories. These inventories are needed to determine impacts of development on Missouri's natural resources.
- Promote and advocate flows required for water-supply intakes, power-plant cooling, and wastewater discharges.
- Promote and advocate increasing the number of rated river-gauging stations by DNR and other agencies, communities and interested parties. Gauge stations are needed to monitor flood flows, low flows during droughts and for calculating Total Maximum Daily Loads for water quality improvements.

Outcome B

Sufficient quantity and quality of groundwater resources

Outcome Measure

Percentage of all wells constructed per well-drilling standards*

** There are wells drilled that are not reported and therefore not certified as being properly constructed.*

Objective 1

Increase compliance with groundwater regulations by 2005 as follows:

- Private wells from 75 percent to 90 percent
- Oil, gas, mineral, and test holes from 93 percent to 95 percent
- Monitoring wells from 90 percent to 95 percent
- Underground injection-control wells from 90 percent to 95 percent

Objective Measure

Percentage of private wells; oil, gas, mineral and test holes; monitoring wells; and underground injection-control wells in compliance with regulations

Wells Meeting Government Standards			
1996 -	50%	1998 -	60%
1997 -	55%	1999 -	65%

Strategies

- Continue to develop and evaluate new procedures to increase compliance with regulations of the Well Drillers Law.
- Enforce regulations of the Oil and Gas Law.
- Provide training sessions for private homeowners, drillers and pump-installers so wells are properly constructed and all groundwater-protection measures installed.
- Encourage financial institutions to ensure that water wells are certified before any lending agreements are finalized.
- Develop a series of maps showing areas of groundwater contamination with any special water-well drilling and casing requirements.
- Develop educational and outreach program for the oil and gas industry to increase compliance with Underground Injection Control regulations.
- Develop and implement procedures to improve the well-registration process.
- Coordinate and assist the Hazardous Waste Program in prevention of groundwater contamination from gasoline containing methyl tertiary butyl ether (MTBE).
- Develop and implement rule changes to the Well Drillers Law to protect aquifers in areas

where well construction standards are inadequate because of nearby supplies of hazardous wastes.

- Investigate potential funding sources to seal abandoned wells, bore holes and open mine shafts to prevent the discharge of surface water into groundwater supplies.

Objective 2

Increase the availability and usability of geologic information as it relates to groundwater quantity and quality.

Objective Measure

Response time to requests for information

Strategies

- Increase the classification of losing streams.
- Increase well logging and rock-core descriptions in areas lacking subsurface geologic and groundwater information.
- Increase aquifer characterizations in areas of increased groundwater usage and land-use development.
- Develop Geographic Information System databases used in evaluations of groundwater resources.
- Provide technical expertise and geologic data to assist in the prevention of groundwater contamination from gasoline containing methyl tertiary butyl ether (MTBE).

Objective 3

Increase the data available on groundwater quantities from 70 fully functional monitoring wells to 80 fully functional monitoring wells by 2005.

Objective Measure

Percentage of fully functional monitoring wells used in the collection of continuous data.

Strategies

- Maintain the integrity of the groundwater stations comprising the monitoring network. To minimize lost data, monitor the network.
- Evaluate need for additional stations in areas of high water demand.
- Ensure data collected is available for use through the Internet and by hard copy.

Outcome C

Improved drinking-water quality in Missouri (Show-Me Result) by public water supplies that meet all health-related standards

Outcome Measure

Percentage of Missourians living where public water supplies meet government standards

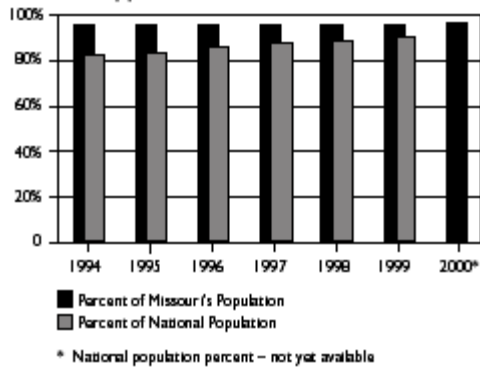
Objective 1

Increase compliance with health-based standards from 87 percent in 1998 to 90 percent in 2005 for all public water systems.

Objective Measures

- Percentage of community public water systems in compliance
- Percentage of noncommunity public water systems in compliance
- Number of incidents of waterborne diseases
- Percentage of public water systems with acute violations

Percent of Missourians Living Where Public Water Supplies Meet Government Standards



Strategies

- Increase in the number of public water systems that are sampled on a regular basis and the number of bacterial, chemical and radiological samples analyzed.
- Increase the number of public drinking water systems inventoried.
- Maintain a contaminant monitoring program for public water systems in accordance with the Safe Drinking Water Act.
- Provide operator-training and other technical-assistance programs for public water systems.
- Provide funding for public water system improvements through grants and loans.
- Assure adequate construction of drinking-water facilities through plan and other engineering reviews, along with permitting and construction inspections.
- Help public water systems protect their source-water quality through source-water protection programs.
- Assist local governments and public water supply districts locate water supply wells in adequate and potable groundwater areas.
- Perform preliminary work on upcoming rules to help bring public water systems into compliance before the effective date of new federal and state rules. Monitor for contaminants before the rules become effective so systems can know in advance of the compliance date if they will have difficulty meeting the new or more stringent requirements. Encourage systems to make necessary changes before a compliance problem develops.
- Cooperate with other state and federal agencies to support nonpoint-source pollution control efforts and other source-water protection programs.
- Ensure that public drinking water systems in Missouri are properly managed through permitting, inspection and enforcement efforts. Promulgate understandable, reasonable and workable drinking-water rules through the Safe Drinking Water Commission.
- Promote system consolidation; wholesale water distributors and other mechanisms to provide public water systems with adequate water supplies.
- Ensure that source issues are adequately addressed in public water systems' emergency operating plans.
- Coordinate contamination incidents and other emergencies with Department of Health and other agencies as appropriate.
- Implement new federal requirements by assessing the impact of the requirements; adopting them as state requirements through a public process; developing permitting, inspection, enforcement and data management efforts; and providing information and technical and compliance assistance to public water systems as needed.
- Develop a comprehensive and long-range program for state parks and historic sites to comply with environmental regulations including preventative maintenance for drinking water systems by June 2000. Develop this plan in concert with appropriate departmental programs.

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Integrated Strategic Plan - October 1, 2000

Strategic Issue 2

Missouri's Air Resources

Missouri's air sustains us in everything we do. Whether working in a garden, waiting for a bus or hitting home runs, clean air provides us life energy. Missouri's air quality has steadily improved during the last decade. Today more than 65 percent of the population lives where the air quality meets government standards. To continue this positive trend, Missouri will have to balance environmental quality with the other needs of industry and Missouri's citizens. The Department of Natural Resources seeks to work together with everyone who has a stake in improving our air quality.

Air quality and emissions data provide a foundation for DNR's air-quality efforts. Standards for the various contaminants, such as ozone, delineate limits for each chemical so that human health is not adversely affected. If concentrations in the air are above that limit, the standard is not met. Whether we attain the limits or standards is the final measure of whether strategies for improving Missouri's air work.

Trends in air quality

Overall air-quality trends for carbon monoxide, sulfur oxides, nitric oxide and particulate matter have improved. Due to the data from air-quality monitors in the St. Louis area, Missouri requested and received approval from EPA to classify the St. Louis area as meeting air-quality standards for carbon monoxide. However, more work is needed to reduce levels of ozone and lead. The majority of Missouri's population lives in the St. Louis and Kansas City metropolitan areas where ozone concentrations remain a concern, especially during hot summer months. Lead concentrations remain a concern, particularly in the areas surrounding lead smelters.

The Department of Natural Resources prepared a plan to reverse the trend of ozone exceedances for the St. Louis area. The plan included several strategies that together should decrease ozone levels. Those strategies include a vehicle-emissions inspection and maintenance program and recovery of gasoline vapors at the fuel pumps. In the Kansas City area, the department is working with leaders from industry, environmental organizations and local government to develop strategies to improve air quality.

Lead can cause damage to the brain and nervous system. An area in southeast Missouri still exceeds federal health standards for airborne lead. Strategies to decrease the levels of lead in the air have been developed. Although air quality, specifically for lead, has improved in recent years, the area continues to show violations of the standards for lead. DNR is investigating the contribution to the airborne lead level by individual sources to better understand the cause of the violations. More effective strategies can then be put in place to reduce the levels of lead.

Air quality has two aspects: what components make up our air, and what it looks like, or the visibility. Work has begun to develop a monitoring network for visibility. From the data gathered, a plan will be developed to address deficiencies by 2006. Visibility will then join the other indicators of air quality for Missouri.

Air quality and global climate change

Many atmospheric scientists and climatologists are concerned that human activities increase



concentrations of carbon dioxide and other greenhouse gases in the atmosphere. This could alter global climate, affecting forests, fisheries, coastal zones, agriculture, water resources, energy demand and supply, air quality and human health.

Fossil fuel use is the source of most of Missouri's greenhouse-gas emissions. Fossil fuels include coal, oil and oil-derived fuels such as gasoline. Greenhouse gas emissions from fossil-fuel use increased about 20 percent between 1990 and 1996. If trends continue as usual, emissions from this source are likely to increase by about 43 percent, from 1990 levels, through the year 2015. Most of the projected increases come from two sources: use of coal to generate electricity, and use of gasoline and other fuels for transportation. Use of transportation fuels accounts for about 80 percent of carbon dioxide emissions from fossil fuels in Missouri.

DNR is reviewing possible actions that could reduce Missouri's greenhouse gas emissions while providing economic and environmental benefits to the state. Similar reviews are taking place in many other states including several of our neighbors. Currently, our efforts focus on education, advocacy for environmentally sound practices that provide for economic progress and promotion of fuels that are alternatives to fossil fuels, such as solar power.

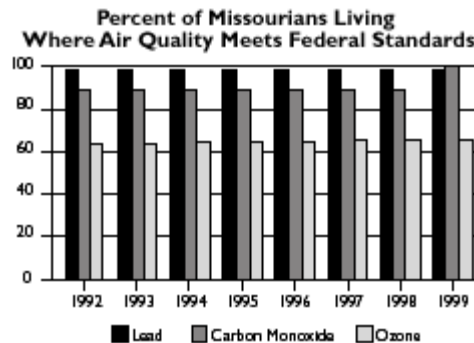
Protect and enhance the quality of Missouri's air resources

Outcome A

Improved air quality in Missouri (Show-Me Result)

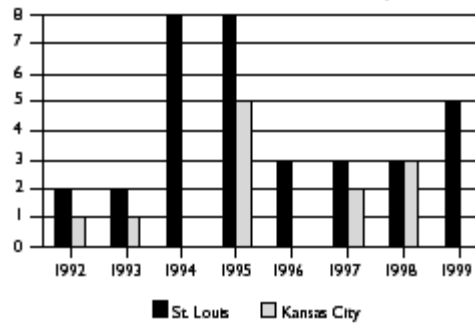
Outcome Measures

- Percent of Missourians living where air meets federal ozone, lead and carbon monoxide standards
- Number of ozone exceedances in St. Louis and Kansas City
- Tons of emissions of nitric oxides, carbon monoxide and volatile organic compounds in St. Louis and Kansas City
- Percentage of sources determined to be in compliance with federal standards for air toxics.



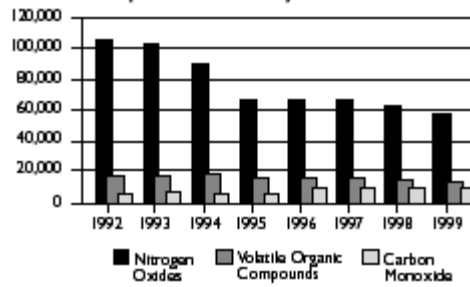
Population shifts, as well as air quality changes, are reflected in the measure. Many Missourians live outside urban core areas, and the data above reflects the increased population in our suburban areas. However, we are working to bring the urban core areas in compliance with air quality standards so all Missourians, regardless of where they work or live, have clean air to breathe.

Number of Days of Ozone Exceedances for St. Louis and Kansas City



The carbon monoxide non-attainment area is composed of St. Louis city and the area in St. Louis county between the city limit of St. Louis and Interstate 270. Air monitors have shown compliance with the National Ambient Air Quality standards for 12 years, and on March 29, 1999, the EPA formally redesignated the area as an attainment area.

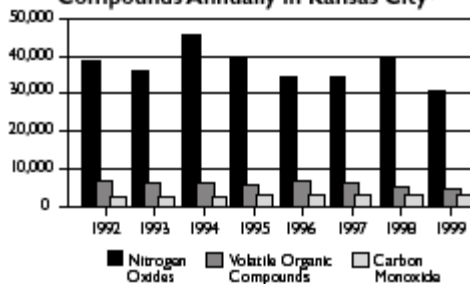
Tons of Emissions of Nitric Oxides, Carbon Monoxide and Volatile Organic Compounds Annually in St. Louis*



* Point-source emissions only for industry as opposed to mobile sources such as cars

The St. Louis Area includes St. Louis city and St. Louis, Franklin, Jefferson and St. Charles counties.

Tons of Emissions of Nitric Oxides, Carbon Monoxide and Volatile Organic Compounds Annually in Kansas City*



* Point-source emissions only for industry as opposed to mobile sources such as cars

The Kansas City Area includes Platte, Clay and Jackson counties.

Objective 1

Regulate emissions and reduce the measured concentrations of air pollutants to eliminate exceedances of the National Ambient Air Quality Standards as follows:

- Reduce volatile organic compound emissions in the St. Louis nonattainment area by 15 percent from 284.03 tons per ozone season day (1996 level) to 241.24 tons per ozone season day by 2003.
- Reduce estimated statewide nitric oxide emissions from electric generating units with a capacity of greater than 25 megawatts from 550.06 tons per ozone season day to 332.7 tons per ozone season day by 2003.
- Decrease violations of the one-hour ozone standard in the St. Louis nonattainment area from one site (1999) to zero by 2003.
- Reduce volatile organic compound emissions in the Kansas City nonattainment area from 279.2 tons per ozone season day (2000 level) to 270.7 tons per ozone

season day by 2003 (these figures include Kansas' portion of the nonattainment area). Maintain no violations of the one-hour ozone standard in the Kansas City nonattainment area.

- Reduce lead emissions in the Herculaneum nonattainment area and achieve the lead standard by 2002. *

** The magnitude of emission reductions necessary to achieve the standard is to be determined as part of a modeling effort, which will be completed by October 2000.*

Objective Measures

- Volatile organic compound emissions in St. Louis and Kansas City
- Statewide nitric oxide emissions from electric generating units with capacities greater than 25 megawatts
- Number of sites with one-hour ozone violations in St. Louis and Kansas City
- Number of lead violations in Herculaneum

Strategies

- Conduct annual emissions inventory. Perform emissions verification, emissions inventory questionnaire audits, training and assistance.
- Issue construction permits and federally enforceable state operating permits in accordance with the state and federal law.
- Implement a viable Clean Air Act compliance assurance and enforcement program including inspections, complaint resolution and timely and appropriate enforcement actions.
- Provide construction permit and operating permit training and application assistance, especially for small businesses.
- Continue implementation of the Enhanced Inspection and Maintenance Program and the Reformulated Gasoline Program in the St. Louis area.
- Fulfill the Clean Air Act requirements in the Kansas City area by reducing volatile organic compound emissions as required by the Kansas City Maintenance Plan.
- Revise St. Louis State Implementation Plan to reduce the emissions of volatile organic compounds by an additional 9 percent, if St. Louis is reclassified as a serious nonattainment area.
- Implement regulations to control nitric oxide emissions from electric generating units with capacities greater than 25 megawatts, including an emissions banking and trading program.
- Develop and use State Implementation Plans for lead facilities with compliance schedules and contingency measures.
- Continue to conduct ambient air-monitoring programs in the nonattainment areas.
- Increase the number of consultations with industry regarding the economic benefit of practices that reduce air pollution.
- Assess new federal air quality standards as they are promulgated and implemented, particularly the fine particle and the eight-hour ozone standards.
- Continue financial and technical support and guidance for local air agencies (St. Louis, St. Louis County, Kansas City and Springfield).
- Promote the use of Environmental Management Systems to improve environmental performance by the regulated community.

Objective 2

Maintain air quality so that monitors continue to show no violations of the current National Ambient Air Quality Standards for criteria pollutants in areas outside the current nonattainment areas (attainment areas).

Objective Measure

Number of National Ambient Air Quality Standards violations in nonattainment areas

Strategies

- Conduct annual emissions inventory surveys. Perform emissions verification, emissions inventory questionnaire audits and provide training and assistance.
- Issue construction permits and federally enforceable state operating permits in accordance with the state and federal law.
- Implement a viable Clean Air Act compliance assurance and enforcement program including inspections, complaint resolution and timely and appropriate enforcement actions.
- Provide construction permit and operating permit training and application assistance, especially for small businesses.
- Expand and operate an ambient air monitoring network to provide air-quality monitoring at sites throughout the state.
- Complete development and implement lead maintenance plan for the Doe Run Bixby nonattainment area.
- Increase the number of consultations with industry regarding the economic benefit of practices that reduce air pollution.
- Promote the use of Environmental Management Systems to improve environmental performance by the regulated community.

Objective 3

Maintain regulation of hazardous air pollutant emissions as follows:

- Maintain identification of 100 percent of all new subject hazardous air pollutant sources during the permit application process to assure that concentrations will not exceed acceptable ambient levels.
- Install and operate one "Clean Air Project" monitor to collect speciated Hazardous Air Pollutant data by 2001.

Objective Measures

- Percent of subject hazardous air pollutant applications reviewed for acceptable ambient levels
- Number of "Clean Air Project" monitors
- Number of Maximum Achievable Control Technology sources determined to be in compliance

Strategies

- Propose adoption by reference all newly promulgated federal National Emission Standards for Hazardous Air Pollutants, Maximum Achievable Control Technology and New Source Performance Standards regulations within 24 months of promulgation.
- Continue to implement the federal asbestos program that was adopted on Nov. 1, 1999.
- Issue construction and federally enforceable state operating permits in accordance with the Missouri Air Law.
- Implement the federal Maximum Achievable Control Technology Standards and review, all major sources of toxic emissions.
- Annually adopt by reference federal Maximum Achievable Control Technology standards into the Code of State Regulations to allow Missouri to enforce them under our EPA delegation agreement.
- Implement a viable Clean Air Act compliance assurance and enforcement program including inspections, complaint resolution and timely and appropriate enforcement actions.
- Provide construction permit and operating permit training and application assistance, especially for small businesses.

- Expand and operate a hazardous-air-pollutants-monitoring network to provide air-quality data at sites throughout the state. Collect two full years of monitoring data by the end of 2005.
- Promote the use of Environmental Management Systems to improve environmental performance by the regulated community.

Outcome B

Protection of the state's pristine air quality areas

Outcome Measure

Visibility measurements at Hercules Glade and Mingo National Wildlife Refuge*

** This data is not yet collected. The objective below focuses on establishing the monitoring system needed to collect this data.*

Objective 1

Establish a visibility monitoring network by 2001 and develop a Regional Haze State Implementation Plan by 2006 as required by federal regulations.

Objective Measure

Visibility monitoring network and state implementation plan *

** In accordance with the federal regulation, the emission reductions necessary for reasonable progress will be determined after a minimum of three years worth of data are collected.*

Strategies

- Analyze speciation data and determine visibility impairment culpability using computer modeling and data analysis.
- Establish reasonable progress goals for each of the Class I areas to improve visibility on the haziest days and to ensure that no degradation occurs on the clearest days.
- Make reasonable progress to reduce emissions of air pollutants that contribute to regional haze by 2008.
- Issue preconstruction permits under New Source Review and Prevention of Significant Deterioration programs.
- Work with other states to determine if out-state sources are contributing to visibility impairment in Missouri's Class I areas, and to determine if sources in Missouri are contributing to impairment in other states.
- Develop a regional haze plan in accordance with federal regulations that reduces culpable emissions and improves visibility.
- By 2060, eliminate manmade contributions to visibility impairment in Hercules Glade and Mingo National Wildlife Refuge according to federal regulations.

Outcome C

Reduction in Missouri's contribution to global climate change

Outcome Measure

Missouri's carbon dioxide emissions

Objective 1

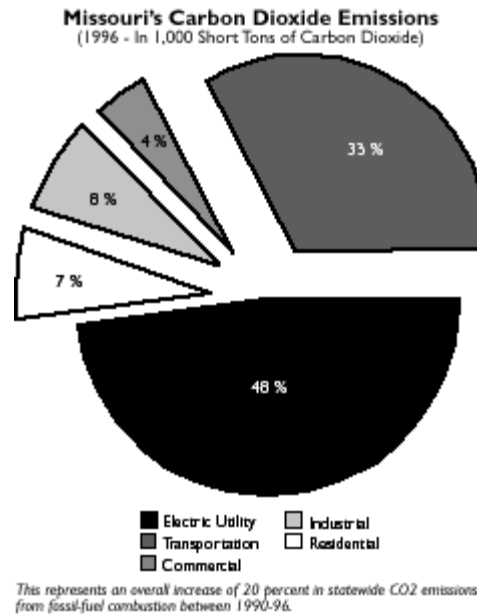
Decrease carbon dioxide emissions from energy use by state government, schools and local government as follows:

Reduce carbon dioxide emissions from state government facilities and fleet operations by 10,000 tons per year compared to emissions that would otherwise occur by 2005.

- Reduce carbon dioxide emissions from local government and school buildings by 35,000 tons per year compared to emissions that would otherwise occur by 2005.
- Reduce carbon dioxide emissions from low-income residential consumers by 7,000 tons per year by 2005 compared to emissions that would otherwise occur.

Objective Measure

Carbon dioxide emissions reductions



Strategies

- Promote energy efficiency measures and displacement in the use of fossil fuels.
- Analyze and report energy-related and greenhouse gas emissions, trends and projections data for general public and decision makers as part of Energy and Environmental Indicators report.
- Disseminate best available state, regional and national data and climate protection information, including data from DNR's 1995 Greenhouse Gas Source Inventory, Greenhouse Gas Emissions and Trends Report, Report of Analysis of Greenhouse Gas Emissions Reduction Options and Greenhouse Gas Fact Sheets.
- Provide technical assistance to facilitate policy actions that can benefit state economy and environment to resolve long-term problem of global climate changes.

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Integrated Strategic Plan - October 1, 2000

Strategic Issue 3

Missouri's Land Resources

Land available for productive use while providing for human health, safety and environmental protection

Protection and enhancement of Missouri's land resources is a broad goal that includes conserving agricultural land, dam safety, land survey and minimizing environmental impacts from mining activities. These initiatives protect human health and safety and help ensure that Missouri's land resources are available for everyone to use.

The Department of Natural Resources, in cooperation with the Soil and Water Districts Commission, protects Missouri's valuable agricultural land and water quality through soil conservation. Sixty percent of Missouri's land is in agricultural production. To date, 68,662,914 million tons of soil have been saved through conservation efforts. The resource and environmental issues impacting agricultural land management have evolved from the more traditional, single-problem issues, such as soil erosion, to more complex environmental issues, such as agricultural nonpoint-source pollution control, fertilizer and pesticide management, biodiversity and urban growth.

The Department of Natural Resources is responsible for minimizing the environmental and health-related impact of mining activities. Of the 170,060 acres of Missouri land disturbed by mining activities, 51,360 acres have been reclaimed or will be reclaimed. Of the remaining 118,700 acres, 55,400 acres of abandoned coal mine lands will not be reclaimed because they are naturally stabilized and are not a threat to public health or the environment. The remaining 63,300 acres are metallic and industrial mineral sites.

As of 1999, 29.7 percent of the original U.S. Public Land Survey corners have been restored. These corners are the basis of all land transactions and property descriptions. Continued efforts in remonumentation and preservation in historic and current survey records will decrease the cost of land surveys and increase the accuracy and reliability of property descriptions. Litigation about property boundaries should decrease as more and more corners are restored. This is becoming much more important with the increase in land values and the need to know the accurate location of property boundaries.

Through the efforts of the department, there have been no failures of regulated dams in recent years. Our objective is to increase the number of regulated dams in compliance with dam safety standards to 100 percent by 2005. These construction standards were implemented to protect downstream residents and property owners from loss of life and property damage.

Bedrock and surficial material geologic mapping was recently completed in the parts of Ripley, Butler and Stoddard counties. This basic geologic information will be used to prepare maps evaluating the seismic risk potential in that area. The department is now conducting geologic mapping in portions of Jefferson, St. Francois, Ste. Genevieve and Washington counties, an area of the state undergoing intense urbanization and development. It also will be applied to all waste disposal or remediation efforts in these counties and toward the protection of potable aquifers.

The entire state of Missouri will have all its soils mapped by 2005, a culmination of more than 50



years of work. The geologic and soil information collected will assist in the responsible development of the counties by private industries, county and regional planning agencies and governmental regulatory programs.

Responsible management of solid and hazardous wastes

Improper processing and disposal of solid wastes can cause health and environmental problems, such as the transmission of disease, groundwater and surface-water pollution and air pollution. Solid waste includes garbage, infectious medical waste, waste tires, construction and demolition waste and industrial and commercial waste.

Managing solid waste is a challenge because of the increasing amount of waste being generated by households and businesses. Each Missourian disposes of approximately 1.12 tons of solid waste annually; a 12 percent increase during the last three years. Even with a slowly increased rate of disposal, Missouri is among the top states in the nation for reducing waste. However, our population and economic base continue to grow. Along with this growth comes more solid waste.

When mismanaged, hazardous waste poses a threat to human health and the environment. The Department of Natural Resources regulates the management of hazardous waste from generation to cleanup. The department registers all hazardous waste generators in Missouri and out-of-state generators that import hazardous waste into Missouri; inspects various hazardous waste industries and monitors compliance with the "cradle-to-grave" requirements of the Resource Conservation and Recovery Act.

The department has the responsibility to pursue the cleanup of abandoned sites contaminated with hazardous wastes throughout Missouri. The person or company responsible for the contamination conducts most cleanups, although federal and state funds are used for some sites where no responsible party has been determined. DNR also provides oversight for the cleanup of hazardous waste from facilities, such as Weldon Spring, currently or previously owned by the federal government. The department works with individuals and businesses that want to voluntarily clean up properties contaminated with hazardous wastes. This initiative is designed to return abandoned and contaminated properties, or brownfields, to productive use.

Decision making for the protection of Missouri's land resources
DNR continuously evaluates the needs of our customers to ensure we are producing the best products in the formats desired. Our constituents increasingly demand access to data and services through the electronic media, which includes the Internet. Continuously upgrading current procedures as well as transferring historical documents to an electronic format is an ongoing effort.

Protect and enhance Missouri's land resources

Outcome A

Improved protection of Missouri's land resources (Show-Me Result) to be available for productive use while providing for human health, safety and protection of the environment

Outcome Measures

- Cumulative tons of soil saved.
- Percent of land previously disturbed by mining activities that has been reclaimed
- Percent of original land survey corners restored in Missouri
- Value of life and property protected through dam regulations*
(*At this time not measured)



Percent of Land Disturbed by Mining Activities That Has Been Reclaimed	
1996 - 45.4%	1999 - 46.3%
1997 - 45.5%	2000 - 46.2%
1998 - 45.7%	

Original Land Survey Corners Restored in Missouri (cumulative)	
1994 - 24.6%	1997 - 28.0%
1995 - 25.9%	1998 - 28.9%
1996 - 26.9%	1999 - 29.7%

Objective 1

Increase the percentage of Missouri agriculture land eroding at less than "T" (i.e., it is tolerable) from 65 percent in 1982 to 95 percent by 2006.

Objective Measure

Percent of agricultural land eroding at the rate which is tolerable ("T")

Strategies

- Continue partnerships with agencies involved in soil conservation. Expand the department's role in providing technical assistance for soil conservation, and promote land management practices that maximize soil protection.
- Collect and manage data related to soil conservation efforts so that a central source of information is available to all interested parties via the Internet.
- Provide training for Soil and Water Conservation District supervisors and employees to maximize conservation efforts.
- Improve the operational accountability through continued enhancement of the Soil and Water Conservation District accounting systems and continuation of audits for the districts to maximize soil conservation efforts.
- Continue to provide various types of financial assistance to construct and implement soil conservation measures including grants and loans.
- Maintain key soil conservation programs.
- Complete the follow-up work for the initial inventory of soils for all of Missouri, update soils information based on land resource areas and plan for future soil survey work describing the character and capability of the soil to aid in sustainable land-use decisions.
- Maintain or increase the number of educational events promoting soil conservation by soil and water conservation districts.

Objective 2

Increase the acreage of mined land returned to productive use from 89,724 acres in 2000 to 93,822 acres by 2004.

Objective Measure

Acres of mined land returned to productive use

Strategies

- Work with the regulated community to implement current practices, including engineering, maintenance and revegetation and adaptive reuse in reclamation practices.
- Reclaim seven abandoned mine land projects.
- Perform liability releases on lands permitted for surface coal mining and industrial minerals mining.
- Annually reclaim four bond forfeiture projects.
- Ensure that active mines in Missouri are properly managed through permitting, inspection and enforcement efforts. When necessary and appropriate for protection of our natural resources, promulgate new rules.
- Improve staff training to develop better knowledge of health, safety and environmental problems found on abandoned mine lands.
- Provide technical assistance and knowledge of mining and mine reclamation to landowners, operators and citizens.
- Collect and manage data related to surface mining and reclamation efforts so that a central source of information is available to all interested parties.
- Perform inspections of all mining sites as required by law or policy.
- Investigate complaints from citizens concerning active mining.
- Integrate new technologies to assist staff in the performance of their duties.
- Assist the Division of State Parks in the remediation of erosion losses from St. Joe State Park to eliminate lead migration off site.

Objective 3

Increase the number of United States Public Land Survey corners restored, re-established, monumented and registered in Missouri by 1,100 annually (cadastral survey).

Objective Measure

Number of U.S. Public Land Survey corners registered annually

Strategies

- Contact and encourage county commissions to participate in the County Surveyor Coop Remonumentation Program.
- Meet private surveyors in the Missouri Association of Professional Surveyors to promote corner monumentation and filing.

Objective 4

Increase the number of new Geographic Reference System monuments and counties with Geographic Reference Systems as follows (geodetic survey):

- Three countywide Geographic Reference System Projects per year.
- Geographic Reference System monuments established statewide by 50 monuments per year.

Objective Measures

- Number of counties with Geographic Reference Systems
- Number of Geographic Reference system monuments

Strategy

Meet with county assessors and municipal government agencies to promote the

densification of Geographic Reference System control for mapping, Geographic Information System, and placing of State Plane Coordinates on corners of the United States Public Land Survey.

Objective 5

Increase compliance of registered dams with dam-safety standards from 95.4 percent to 100 percent by 2005.

Objective Measure

Percent compliance of regulated dams

Strategies

- In order to determine the value of life and property protected through dam regulations (outcome above), inundation maps for those areas downstream from dams must be developed. Current capabilities allow for one inundation map to be completed per year. To effectively measure this public benefit, inundation maps must be completed on all dams that significantly protect life and property downstream.
- Inspect existing dams that do not have valid registration permits.
- Continue to perform permit renewal inspections at no cost to the dam owner. Class 1 dams will be inspected every two years; Class 2 dams every three years and Class 3 dams every five years.
- Work with representatives from the Attorney General's Office to resolve enforcement referrals.
- Develop law that applies to the safety of dams less than 35 feet (currently unregulated) in height when the public is, or potentially could be, at risk.
- Expand efforts in dam or reservoir sitings to incorporate geologic site evaluations.
- Develop a comprehensive and long-range program for state parks and historic sites to comply with environmental regulations and codes for public providers including dam stabilization and repair.
- Conduct training courses for dam owners around the state on how to prepare emergency-action plans.
- Develop a sustaining funding source and establish a procedure to provide funding in times of a dam-related emergency.

Objective 6

Increase the availability and usability of geologic information as it relates to land resources.

Objective Measures

- Decreased response time to requests for information
- Percent of state evaluated for earthquake and geologic hazards
- Percent of state covered with mineral and energy evaluations
- Percent of environmental site assessments utilizing Geographic Information System databases

Strategies

- Conduct geologic investigations to locate and identify groundwater recharge areas.
- Increase efforts to identify losing and gaining streams to assist in environmental and geologic site assessments.
- Increase efforts to locate and map sinkholes/other karst features.
- Increase the availability of information and technical assistance on mineral resources.

- Expand efforts to acquire and digitize underground mine maps for entry into the Mine Map Repository in accordance with the Mine Map Repository Act.
- Develop a map detailing landslide potential statewide for use during land development.
- Continue and expand earthquake risk assessment mapping.
- Evaluate staffing needs to accelerate hazard mapping to comply with the Geologic Hazards Bill.
- Increase the amount of geologic information stored in Geographic Information System databases to provide in a format that is easily accessible and applicable in land-use decisions.

Objective 7

Increase annual geologic and soils mapping of the state's land resources as follows:

- Surficial material geologic maps from 10 to 20 (7.5 minute quadrangle maps) by 2005.
- Bedrock geologic mapping from 10 to 20 (for 7.5 minute quadrangle maps) by 2005.
- Geologic hazard mapping (includes environmental geology sensitivity mapping) from 1 to 2 (30 x 60 quadrangles) by 2005.
- Soil mapping completed or updated from 500,000 acres in 2002 to 4 million acres by 2008.

Objective Measures

- Number of current surficial material, bedrock geology and geologic hazard maps
- Number of rock drill cores acquired and permanently stored for public use
- Footage of core and drill cuttings described and entered into a database for public use
- Acres of soil mapped

Strategies

- Consider alternative methods of making geologic maps available to the public.
- Develop comprehensive statewide bedrock and surficial materials mapping program.
- Solicit funding from general revenue and outside sources for statewide geologic mapping and implement additional mapping recommended by the State Geologic Mapping Committee.
- Acquire and permanently store for public use core and drill cuttings from areas where limited information is available.
- Increase the footage of rock drill core and drill cuttings described for public use.
- Improve the efficiency of describing core and cuttings by developing voice recognition, direct to database data entry techniques.
- Increase the amount of geologic mapping information accessible for Geographic Information System use.
- Complete the initial mapping of soils for all of Missouri and plan and implement future soil survey work describing the character and capability of the soil to aid in sustainable land-use decisions.
- Improve the availability of soil survey information.

Outcome B

Improved protection of Missouri's land resources (Show-Me Result) through environmentally responsible management of solid and hazardous waste

Outcome Measures

- Per capita disposal rate for solid waste

- Incidence of improperly disposed of solid waste
- Number of hazardous-material sites remediated and returned to productive use (annually)
- Percent of facilities meeting hazardous waste standards
- Amount of hazardous waste generated
- Proportion of hazardous waste recycled, used for energy recovery, or reused relative to the amount generated
- Percentage of all tanks in compliance with the law and regulations

In 2000, 269 incidents of improperly disposed solid waste were detected.

In 1999,

- 75 hazardous material sites were remediated and returned to productive use
- 85 percent of hazardous waste was properly managed
- 276,347 metric tons of hazardous waste were generated
- 27.5 percent was recycled, used for energy recovery or reused relative to the amount generated
- 10.7 percent was treated relative to the amount generated
- 39 percent of tanks were in compliance with laws and regulations

Objective 1

By 2004, maximize the amount of solid waste recovered.

Objective Measures

- Tons of demolition and construction, industrial and commercial and food waste diverted from landfills and recycled
- Tonnage of waste tires reused beneficially
- Tonnage of solid waste going to landfills

Strategies

- Develop and promote feasible alternatives to the disposal of wastes in landfills.
- Promote volumetric or unit-based pricing mechanisms that account for the full cost of solid waste disposal.
- Encourage food-waste composting, reuse of construction and demolition waste and commercial and industrial waste reduction to address the largest portion, by weight, of waste that is disposed in landfills.
- Provide financial assistance for projects which result in a decrease in the amount of materials disposed of and an increase in the amount reused.
- Within the state park system, convert 50 percent of the facilities to a program where guests carry out their own trash to reduce trash-collection costs and to increase visitor awareness of waste reduction and the benefits that can be gained through recycling programs by 2003.
- Encourage the purchase and use of recycled products within the state park system such as paper, oil, paint and stains, recycled plastic lumber and trash receptacles showcasing their benefits toward use and durability when possible.
- Promote landfill methods that facilitate future waste recovery.
- Consult with industry regarding the economic benefit of practices that comply with environmental laws.
- Assist businesses using recovered waste to make products.
- Assist businesses with their ongoing solid-waste reduction or recycling programs.
- Promote active recycling and waste-reduction programs.
- Assist businesses beneficially reusing waste tires.
- Promote municipal integrated solid-waste systems.

Objective 2

By 2004, minimize the amount of improperly disposed solid waste.

Objective Measures

- Number of illegal solid-waste dumps cleaned up (including tires)
- Number of illegal dumps cleaned up (including tires)

Strategies

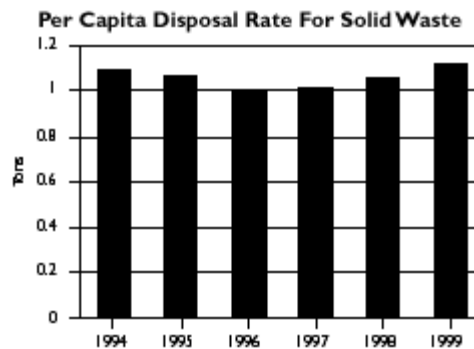
- Develop and promote economical and convenient solid-waste management services accessible to all Missourians.
- Clean up illegal waste sites, and promote local programs that discourage illegal dumping in order to prevent future cleanups of such sites.
- Work with counties and cities with active programs to discourage illegal dumping.

Objective 3

By 2004, maximize compliance of solid-waste disposal areas.

Objective Measures

- Percent of landfills meeting requirements of Subtitle D of the Resource Conservation and Recovery Act
- Number of stream miles contaminated due to leachate discharges from landfills
- Number of incidences of unresolved methane gas migration problems at landfills



Strategies

- Ensure that Missouri landfills meet solid-waste rules and laws, through permitting, inspection and enforcement efforts. When necessary and appropriate for protection of our natural resources, promulgate new rules.
- Promote public awareness and community involvement in the locating of landfills through meetings held during the initial permitting process. This provides an opportunity and greater role for groups or individuals that may be potentially impacted by a landfill in their area.
- Assist landfills with uncorrected methane gas migration problems to identify and remediate occurrences.
- Assist landfills to ensure proper installation of groundwater monitoring systems to verify that landfills are not polluting groundwater.
- Coordinate with the Division of Geology and Land Survey to ensure that landfills are designed and constructed appropriately.

Objective 4

Remediate in excess of 500 sites contaminated by hazardous materials to a level appropriate for new development between fiscal year 1998 and fiscal year 2004.

Objective Measure

Number of hazardous waste sites remediated under the Comprehensive Environmental Response, Compensation and Liability Act, Resource Conservation and Recovery Act and Voluntary Cleanup Program.

Strategies

- Collaborate with the Environmental Protection Agency to administer Comprehensive Environmental Response, Compensation and Liability Act in Missouri.
- Provide independent sampling and oversight of cleanups at current and formerly used U.S. Department of Defense and Department of Energy sites to minimize potential impacts to human health and the environment.
- Administer the corrective action program for facilities subject to the corrective action requirements of Resource Conservation and Recovery Act to investigate and remediate a pre-existing hazardous waste problem.
- Administer the state Registry of Abandoned or Uncontrolled Hazardous Waste Sites.
- Use the Cleanup Levels for Missouri document to facilitate risk-based cleanups and appropriate reuse of property which results in economic development and protection of human health and the environment.
- Work with landowners, developers and others to voluntarily remediate property through the Voluntary Cleanup Program and the Superfund Cooperative Program.
- Assist the Division of State Parks in remediation of park lands contaminated by hazardous waste (upon discovery).
- Provide sampling and assessment for Division of State Park facilities as a formalized inclusion with the Division of Environmental Quality-Environmental Services Program work plan to provide services up to 10 sites per year (as needed).

Objective 5

Maximize the number of hazardous waste facilities that are properly managed.

Objective Measures

Percentage of hazardous waste facilities in compliance with the Resource Conservation and Recovery Act

Strategies

- Ensure that hazardous waste in Missouri is properly managed from cradle to grave through permitting, inspection and enforcement efforts. When necessary and appropriate for environmental protection, promulgate new rules.
- Regional offices will conduct a limited number of outreach inspections to educate and inform conditionally exempt and small-quantity hazardous waste generators on the proper management of hazardous waste.
- License and inspect hazardous waste transporters.
- Conference, conciliation and persuasion will be used to encourage violators to return to compliance. If necessary, enforcement will be used to compel compliance, deter potential violators and eliminate any economic advantage gained with noncompliance.
- Maintain and pursue appropriate delegation and authorization to encourage proper management of hazardous waste.
- Close hazardous waste management units that no longer need to operate under a permit.
- Work with industry to clean up existing contamination at hazardous waste facilities.
- Collect and manage data related to hazardous waste so that a central source of information is available to all interested parties.
- Promote use of Environmental Management Systems at hazardous waste facilities.

Objective 6

Maintain proper management of 100 percent of the hazardous substance incidents reported through the DNR's 24-hour Environmental Emergency Response telephone line.

Objective Measures

- Number of hazardous substance incidents reported
- Number of incidents properly managed which required an on-site Environmental Emergency Response
- Number of incidents properly managed which did not require an on-site Environmental Emergency Response

Strategies

- Operate the state's 24-hour Environmental Emergency Response telephone line with technically qualified staff.
- Maintain Environmental Emergency Response team readiness through training, equipment maintenance and emergency planning.
- Respond to hazardous substance releases as needed.
- Provide technical advice to ensure the proper cleanup of any hazardous substance releases.

Objective 7

Increase the number of drug lab collection stations established with local law enforcement from 13 to 21 by the year 2003.

Objective Measures

- Number of collection stations established
- Number of clandestine drug labs processed

Strategies

- Facilitate the establishment of drug lab collection stations.
- Provide training for proper packaging and transport of drug lab materials to collection station.
- Provide training for the proper management and operation of collection stations.
- Arrange for processing of materials and off-site disposal, if necessary.

Objective 8

Reduce the amount of hazardous waste generated (relative to industrial activity) from an average of 95 metric tons per generator to 85 metric tons per generator by fiscal year 2004.

Objective Measures

- Average amount of hazardous waste generated per generator
- Amount of hazardous waste recycled or reused
- Amount of hazardous waste treated by thermal recovery

Strategies

- Work with businesses and the public to promote pollution-prevention activities in the following order: reduction, reuse, recycle, thermal recovery and treatment.
- Consult with industry regarding the economic benefit of practices that reduce pollution.
- Require pollution-prevention activities through our inspection, enforcement and permitting activities.
- Certify for resource recovery purposes, facilities that recycle hazardous waste.

Objective 9

Increase the percentage of tank sites remediated as follows:

- All underground storage tank release sites remediated from 75 percent fiscal year 2000 to 80 percent by fiscal year 2004.
- Above ground storage tank release sites remediated from 13 percent in fiscal year 2000 to 38 percent by fiscal year 2004.

Objective Measures

- Number of new releases as a percentage of total active tanks
- Percentage of contaminated tank sites remediated

Strategies

- Remediate contaminated tank sites through coordination with the Petroleum Storage Tank Insurance Fund and utilization of the federal Leaking Underground Storage Tank Trust Fund.
- Conduct regulatory oversight to include registering sites, field inspections and enforcement at sites failing to comply with existing cleanup and remediation requirements and standards.
- Prevent groundwater contamination by ensuring that gasoline containing methyl tertiary butyl ether (MTBE) is stored only in tanks meeting EPA's 1998 tank upgrade standards, especially in the St. Louis ozone nonattainment area.
- Increase underground storage tank inspections in areas known to have the heaviest concentration of MTBE fuels being delivered.
- Develop a comprehensive and long-range program for state parks and historic sites to comply with environmental regulations and codes for public providers including removal of underground storage tanks.

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Integrated Strategic Plan - October 1, 2000

Strategic Issue 4

Preservation and Enjoyment of Missouri's Significant Natural and Cultural Resources

Through its state park system and related outreach programs, the Missouri Department of Natural Resources continues its strong commitment to preserving the state's natural and cultural heritage and to providing recreational opportunities. Our system strives to reach a balance between the preservation of Missouri's significant natural and cultural resources, and enjoyment of these resources through recreational opportunities.

In 1999, the state park system totaled 81 state parks and historic sites, covering approximately 137,000 acres and serving more than 18 million visitors annually. In addition, its Historic Preservation Program and grant program for outdoor recreation projects enhanced the effort to protect cultural landmarks and provide healthy, quality outdoor activities.

Missouri's natural and cultural resources

Deep forests, sunny glades, wetlands, tallgrass prairies and clear-flowing streams all are protected in state parks. Likewise, the plants and animals that call these landscapes home find protection here, including the federally endangered Mead's milkweed at Taum Sauk Mountain State Park and the prairie chickens of Prairie State Park.

In Missouri, the Missouri Natural Areas Committee designates the highest-quality landscapes as state natural areas. The number of natural areas in state parks increased to 38 with the designation of the Elk River Breaks Woodland Natural Area at Big Sugar Creek State Park in McDonald County. The designation recognizes the significance of the areas and gives them special protection. A total of 67,167 acres of land in state parks was designated as ecological stewardship areas, which means they are subject to management for native species and ecosystem improvements. Thirty-eight state parks have populations of rare, endangered or threatened species.

The National Register of Historic Places is the national honor roll for historic and cultural structures and sites. More than 400 buildings, structures and archaeological sites in the state park system are currently listed on the National Register. Sixty-one properties statewide were added to the National Register in 1999, bringing the total number of individual resources throughout Missouri to 16,578. Through its Historic Preservation Program, the department assists Missouri citizens and groups in identifying, evaluating and protecting the state's historical, architectural and archaeological resources.

The system must protect the resources from outside threats, such as water pollution and air pollution, and from such internal threats as overpopulation of deer and invasion by exotic species. One of the greatest threats is encroachment on park boundaries. With increases in construction and development all across the state, state parks and historic sites become islands. These trends were first documented in the first comprehensive study to determine threats to the state park system in 1992. This study will be revised and updated to reflect today's threats.

Enjoyment of Missouri's state park system



The Missouri state park system continues to attract visitors from throughout the state and the nation. In 1999, 18,151,259 people visited state parks and historic sites, an increase of 3 percent from the previous year and following a trend of increased visitation during the last several years. The number of camping permits also increased, with 308,697 permits issued.

Surveys conducted in the state park system showed that 51 percent of Missouri state park visitors were from urban areas while 49 percent were from rural areas. Surveys also showed that 99 percent of the visitors were satisfied with their visit to state parks and historic sites. The surveys are being conducted in an effort to gather input from visitors as to how the department can make state parks and historic sites better for everyone.

Recreational activities were enhanced not only through the state park system but also through its grant program, which administered state-funded Landmark Local Parks Program grants, federal recreational trail grants and federal Land and Water Conservation Fund grants. These programs allow private and public organizations to build or repair outdoor recreation facilities and to create new recreational opportunities.

Many activities were focused on providing opportunities for residents in urban areas. Efforts in St. Louis included the opening of Route 66 State Park in St. Louis County and the upgrading of the Scott Joplin House State Historic Site. Work continues on developing a greater state presence and a state museum annex at the Bruce R. Watkins Cultural Heritage Center in Kansas City. Another initiative is to develop a state park at the confluence of the Mississippi and Missouri rivers.

Partnerships have played a key role in efforts to reach the state's urban residents. The Missouri Parks Association created a program to offer recreation and environmental enrichment programs for urban youth by taking them to Kansas City area state parks and historic sites. The department has continued its involvement with Bass Pro Shops and other organizations to sponsor the Wonders of the Outdoor World at Roaring River State Park. This cooperative effort will be expanded in the future. The department also proposed the creation of mini-urban heritage parks in St. Louis and Kansas City in partnership with city parks departments and neighborhood organizations.

The effort to reach urban residents is just one of the challenges that faces DNR. With a continued increase in visitation, the demand on current facilities and the need for new facilities grows. This puts a demand on the system's infrastructure and staff. Although not as flashy as a new visitor center or campground, a sound infrastructure must be in place for a park or site to operate efficiently and effectively.

Goal I

To protect and preserve the integrity of Missouri's significant natural features and cultural resource heritage

Outcome A

Protection and enhancement of Missouri's significant natural features

Outcome measures

- Acres of significant native landscapes preserved in state parks
- Percentage of natural landscape themes and regions represented and protected in state parks
- Percentage of Missouri's listed rare, endangered or threatened species and ecosystems protected in state parks

In 2000, 15,700 acres were designated as Missouri Natural Areas contained within the state park system and 67,167 acres were designated as Ecological Stewardship Areas

Objective 1

To decrease threats* to natural and cultural resources in state parks by 10 annually through purchase of lands adjacent to parks and historic sites through January 2005.

** Threats as identified in the state parks' Threat Study, such as residential encroachment, watershed and viewshed protection and loss of biodiversity due to inadequate lands for ecosystem establishment.*

Objective Measure

Threats to natural and cultural resources reduced through adjacent lands acquisition

Strategies

- Revise 7 percent of the park system's facility conceptual development plans annually to identify key properties needed to preserve and protect park resources, biological reserves and viewsheds.
- Re-evaluate the priority ranking system used in evaluating all adjacent lands acquisitions to ensure it reflects strategic goals and objectives by July 2002.
- Increase the adjacent lands acquisition budget to accommodate changes in the price of lands and sustain a progressive and systematic program of adjacent lands acquisition.
- Work with the Division of Environmental Quality to develop and implement an Environmental Management System as a pilot project for establishing state agency initiatives as an approach to environmental compliance for all natural resources by 2003.

Objective 2

To increase the percentage of state park lands included within active natural resource stewardship units by a minimum 600 acres annually; thus bringing the total acres of land actively managed for native species and ecosystem improvements from 19 percent (approximately 26,000 acres) to 22 percent (approximately 30,000 acres) of total state park lands by January 2005.

Objective Measures

- Percentage of state park lands included within active natural resource stewardship units
- Percentage of state park lands with implemented natural resource stewardship plans

Strategies

- Expand the number and effectiveness of monitoring programs (both qualitative and quantitative) tracking the status of threatened signature native environments and plant or animal species of special conservation concern to accommodate natural resource management plan requests.
- Implement as a new standard the Natural Resource Information Database and Geographic Information Systems to accommodate natural resource management plan requests to provide data management services for natural resource information and management needs.
- Develop Natural Resource Management Plans for each facility at a minimal rate of 7 percent of facilities per year until complete. Each completed plan shall be annually reviewed to examine facility obligations and results in meeting resource stewardship goals with oversight and technical assistance by the Operations and Resource Management Program.
- Commit a percentage of field staff time toward resources management at individual facilities as outlined through the General Management Plan and the performance planning process.
- Increase the annual allocation for natural resource management projects to compensate for inflation, ensuring sustained funding for restoration of native ecosystems, protection and mitigation of wetland and riparian zone hydrology, control of invasive exotic species and reduction of other threats in state parks.

Objective 3

To increase the acreage of park lands contributing to the protection of significant natural communities and landscapes as recognized by the Missouri Natural Areas and the Natural Heritage Sites programs by 2000 acres by January 2005.

Objective Measures

Acres of park lands designated as Natural Areas and Heritage Sites
Percentage of park lands contributing to the protection of significant natural communities and landscapes

Strategies

- Continue to work within the Missouri Natural Areas Committee to support interagency efforts to identify, designate and protect Missouri Natural Areas.
- Complete the DNR Natural Areas Plan by July 2002.
- Use Natural Areas criteria to assist in the review of the state park expansion plan identifying national and statewide natural resource themes and relationships of existing and potential facilities to natural resource theme gaps by January 2002.
- Review and revise natural theme gaps listings for expansion plan including management unit design standards to meet regional biodiversity conservation concerns by January 2002.
- Develop the Natural Heritage Site program and target approximately 15 sites for inclusion to assist the division's efforts to acquire, restore and preserve lands that represent Missouri's native natural landscapes and expansion plan gaps by January 2005.

Outcome B

Preservation of Missouri's cultural resource heritage

Outcome Measures

- Percentage of historic structures included under state park cultural resource plan protection (As a new measure, base numbers are being reported for use in calculating later percentages. The cultural resource plan is a chapter within each state park and historic site's General Management Plan. This formalized approach to cultural resource inventory and management is a newly designed concept with a pilot project currently underway in three state park facilities.)
- Cumulative number of Missouri properties listed on the National Register of Historic Places
- Historic properties aided through incentive or local government assistance programs
- Percentage of properties containing archaeological sites* and threatened archaeological sites* of those properties reviewed in state parks (This is a new measure, data yet to be collected.)
- Percentage of properties containing archaeological sites and threatened archaeological sites of those properties reviewed other than in state parks (This is a new measure, data yet to be collected.)
- Number of state park artifacts receiving preservation treatment or added to interpretive programming

** Archaeological sites are sites where some evidence of archaeological material is found. Threatened archaeological sites are those archaeological sites deemed to be of significant importance with potential for impacts from certain developments.*

In 1999, 137 artifacts were preserved through cataloging treatments.
In 2000, 421 artifacts were preserved through preservation treatments, 2,887 preserved through cataloging treatments and 49 were added to interpretive programming.

Objective 1

Increase the number of completed cultural resource management plans for each state park facility at a minimal rate of 7 percent of facilities per year until all facilities have plans through July 2005.

Objective Measure

Number of completed cultural resource management plans

Strategies

- Complete a program to identify or develop standards for historic structures and landscapes for use in evaluating and rating condition of elements to gain status toward stable and good condition by July 2002.
- Inventory and evaluate all historic structures and landscapes based on the established standards for resource type, condition and preservation treatments for inclusion within cultural resource management plans at a minimal rate of 7 percent of facilities per year until all facilities are completed.
- Review completed cultural resource management plans annually to examine facility obligations and results in meeting resource stewardship goals; oversight provided through the Cultural Resource Management Program and district offices.
- Contribute to the update of the division's expansion plan through the cultural resource planning process to identify system gaps in major cultural themes and historic subthemes as identified for geographic and chronological criteria and adequate statewide and regional coverage by January 2002.

Objective 2

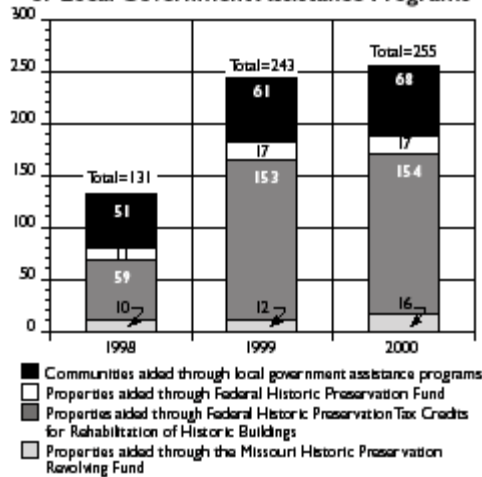
Increase the number of historic properties identified and evaluated for historic significance through outreach efforts by 5 percent by January 2005.

Objective Measures

- Total properties identified and evaluated for historic significance
- Number of citizen-prepared Historic Register nominations and requests for eligibility assessment



Historic Properties Aided Through Incentive or Local Government Assistance Programs



Strategies

- Utilize DNR Urban Core Teams in St. Louis and Kansas City to assist in the identification and documentation of properties potentially eligible for the National Register of Historic Places.
- Target 45 percent of the annual Historic Preservation Grant funds for National Register survey and nomination projects.
- Provide training or consultation to local governments, agencies, consultants and citizens on National Register eligibility and the survey and nomination process.
- Provide better mechanisms for the storage and retrieval of information and data collected on identified historic properties, particularly in regard to National Register eligibility.

Objective 3

Increase public participation in historic preservation incentive programs by 3 percent annually through January 2005.

Objective Measures

- Number of communities seeking local preservation ordinance aid
- Number of communities participating in the Certified Local Government program
- Number of properties successfully passed through the Historic Preservation Revolving Fund
- Number of properties receiving Historic Preservation Fund grant assistance (development or pre-development grants)

Strategies

- Utilize DNR Urban Core Teams in St. Louis and Kansas City to assist in the identification of potential state and federal tax act projects, Revolving Fund projects and Historic Preservation Fund development and pre-development projects.
- Organize or participate in annual forums or workshops to increase incentive effectiveness including programs annually on the federal and state tax credits, and four programs annually dealing with preservation topics.
- Partner with local governments or not-for-profits to utilize the Missouri Historic Preservation Revolving Fund to acquire and protect endangered historic properties.
- Target 40 percent of available Historic Preservation Grant funding toward historic structure pre-development and development projects and 15 percent of available grant funding toward educational, outreach and other planning activities to maximize preservation initiative effectiveness.

- Provide design assistance and training to communities participating in the Missouri Main Street Program.
- Promote investment and preservation of historic resources through expanded educational and outreach activities.
- Work with other cultural resource providers to coordinate and distribute information on these resources. Provide technical assistance to communities to foster ecotourism projects.
- Increase participation in the Certified Local Government program by conducting yearly performance evaluations, organizing and facilitating at least one training opportunity for commissioners and staff in communities participating in the Certified Local Government program, working to increase the number of communities enacting preservation ordinances by 5 percent by January 2005.

Objective 4

Increase the number of potential archaeological properties evaluated through the archaeological review process* by 1 percent annually through January 2005.

** The archaeological review process is conducted in state parks to identify, protect and interpret significant resources. It is also an important prerequisite for federal projects throughout the state. The evaluation process may include four sequential steps: 1) an initial review of the potential for sites; 2) an archaeological survey if the review determines it is needed; 3) the recording of sites during the survey; 4) the determination of site significance and disturbance potential. The process is important in identifying significant archaeological resources and allowing consideration of options to minimize destruction when found.*

Objective Measures

- Number of archaeological properties identified and evaluated in state parks
- Percentage of properties surveyed of those reviewed in state parks
- Number of archaeological properties identified and evaluated other than in state parks
- Percentage of properties surveyed of those reviewed other than in state parks

Strategies

- Expand and enhance archaeological survey resources for state parks through additional agency and program partnerships and development of annual work plans that acknowledge survey time needed for interpretive projects and cultural resource theme expansions as well as construction and emergency excavations.
- Evaluate threats to archeological resources in state parks as a component of the project update and assessment concentrating on needs for immediate inventory of sites and stabilization strategies for significant archaeological resources.
- Facilitate the reinterment of identified unmarked human burials and Native American remains for both affiliated and unaffiliated burials as a partner in the Native American Graves Protection and Repatriation Act process.
- Improve responsiveness to archaeological reviews mandated through federal requirements (e.g., federal projects and storm-water permitting) to include expanded abilities for timely review and development of written guidelines for archaeological survey.
- Develop activities and materials that are designed to increase public awareness of the need for archaeological resource protection.

Objective 5

Increase the percentage of state park artifacts fully documented within the automated cataloging system from 4 percent to 40 percent by January 2005.

Objective Measure

Percentage of state park artifacts fully documented within the automated cataloging

system

Strategies

- Provide periodic training or consultation sessions on cataloging and the use of current computer catalog software to field personnel to ensure effective artifact and accession management.
- Provide quarterly updates to the field units engaged in the artifact data entry process as a means of benchmarking progress.
- Assist parks with limited artifact holdings and without computer cataloging equipment to update catalog records and include collections in the database at a rate of one park per year through January 2005.
- Target one park annually with a limited artifact collection (defined as 500 objects or fewer) to inventory and either convert or complete its data entry to update that facility's catalog records.

Objective 6

Maintain at eight to 10 projects annually, the rate of formal assessment and conservation treatment projects designed to preserve significant cultural resources for interpretive use through January 2005.

Objective Measure

Number of formal assessment and conservation treatment projects completed annually

Strategies

- Develop annually, an artifact stabilization and conservation treatment plan that preserves key artifact and collection materials for interpretive use and maximizes effectiveness of enhancement project funding.
- Review and evaluate all artifact preservation and interpretive enhancement projects with the project approval committee during a two-month period (May and June) and provide a recommended list of projects to the division director by July 1 of each year.
- Provide all affected state parks and historic sites with a list of division approved cultural resource stabilization and interpretive enhancement projects by Aug. 1 of each year.

Goal II

To provide opportunities for all citizens to enjoy Missouri's natural and cultural resources and the benefits they provide toward health and quality of life.

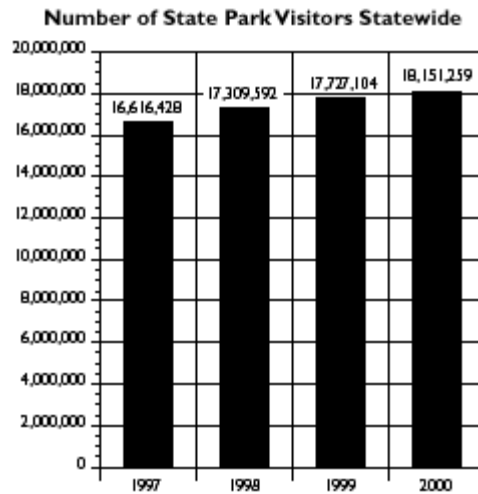
Outcome A

Increased availability of Missouri's state park system and outdoor recreation opportunities throughout the state

Outcome Measures

- Number of state park visitors statewide
- Percentages of rural and urban state park visitors
- Percentages of minority state park visitors
- Percentage of state park visitors with disabilities

In 1999, 51 percent of Missouri State Park visitors were from urban areas and 49 percent were from rural areas.
Also in 1999, 93.5 percent of visitors were caucasian and 6.5 percent were minorities.



Objective 1

Increase state park system opportunities available to residents of the St. Louis area (statistical metropolitan area) by a minimum of three new opportunities* annually through January 2003.

** New opportunities may include high-visitation events, new or enhanced ongoing programs at existing facilities or the addition of new facilities managed all or in part by the division.*

Objective Measure

New state park opportunities available to St. Louis-area residents

Strategies

- Increase Rosebud Cafe programs at Scott Joplin State Historic Site to interpret African-American performing arts in St. Louis and Missouri and to interface with urban neighbors through development of monthly programs utilizing the two-performance-area format by January 2003. Also, initiate an evaluation of potential opportunities provided by restoration of the row houses located on Delmar Avenue.
- Increase outreach in the St. Louis community by participating in the department's St. Louis Urban Core Office project focusing on historic preservation and outdoor recreation grant opportunities and outreach programs designed to interface with urban users.
- Promote the development of the Great Rivers Resource Center, a regional information and interpretive facility to be located near the confluence of the Missouri and Mississippi rivers, in cooperation with the Department of Conservation providing a historic perspective of the importance of the rivers and their recreational activities, particularly focusing on the urban community. Use this opportunity to educate the public on area recreational opportunities and provide a hub for trail access.
- Acquire and begin development of a 200-acre parcel located at the confluence of the Missouri and Mississippi rivers allowing public access and interpretation of two of North America's most significant rivers and watersheds; extending Katy Trail State Park to this confluence by July 2004.
- Develop a pilot program targeted toward local sponsorships of Urban Heritage Parks in St. Louis, which link smaller community parks to significant interpretive themes and their associated state parks and historic sites. Partnerships with communities and cities may include promotion, activities, events, grants and maintenance.
- Offer funding opportunities for park and trail development in the St. Louis Statistical Metropolitan Area through federal and state grant programs including the Landmark Local Parks Program, Land and Water Conservation Fund and the

National Recreational Trails Program to include an annual general fund request for the city's park infrastructure; program to include grant monitoring and inspections to ensure high-quality projects.

- Continue to develop program activities at Castlewood and Babler state parks and First State Capitol and Mastodon state historic sites that enhance and expose state park and historic sites to urban area residents. (CAMP Kids, Wonders of the Outdoor World, Cultural Resource Tours).
- Continue development of Route 66 State Park as both a natural and cultural park to preserve the Meramec River corridor and interpret the importance of this route to early automobile travel. Offer opportunities targeted to the urban community and information concerning the state park system.
- Extend the Al Foster Trail from Route 66 State Park to the Lincoln Beach Unit of Castlewood State Park.
- Increase involvement with metro-area radio stations, newspapers and TV stations to provide free information and feature articles about the state park system.
- Increase involvement with the Division of Tourism to develop an advertising campaign to promote the state park system in the urban area.
- Increase involvement with the Missouri Department of Transportation and Tourist Information Centers to promote the state park system and upgrade the exhibit and brochure distribution areas featuring state parks and historic sites.

Objective 2

Increase state park system opportunities available to residents of the Kansas City area (statistical metropolitan area) by a minimum of three new opportunities* annually through January 2003.

** New opportunities may include high-visitation events, new or enhanced ongoing programs at existing facilities or the addition of new facilities managed all or in part by the division.*

Objective Measure

New state park opportunities available to residents of the Kansas City area

Strategies

- Provide additional opportunities for historic preservation and opportunities for urban students to learn about minority and urban historic themes through participation in the Discovery Center in Kansas City.
- Develop a pilot program targeted toward local sponsorships of Urban Heritage Parks in Kansas City, which link smaller community parks to significant interpretive themes and their associated state parks and historic sites. These partnerships with local communities and cities may include promotion, activities, events, grants and maintenance.
- Offer funding opportunities for park and trail development in the Kansas City Statistical Metropolitan Area through federal and state grant programs including the Landmark Local Parks Program, Land and Water Conservation Fund and the National Recreational Trails Program to include an annual general fund request for the city's park infrastructure; program to include grant monitoring and inspections to ensure high-quality projects.
- Increase the park system's planning and operational involvement in the Bruce R. Watkins Center in Kansas City to improve interpretive programming quality and availability by January 2003.
- Prepare a strategy for connecting Katy Trail State Park to the Kansas City area by July 2003.
- Increase outreach in the Kansas City community by participating in the department's Kansas City Core Office project focusing on historic preservation and outdoor recreation grant opportunities and outreach programs designed to interface with urban users.

- Develop a pilot promotional campaign and event in the Kansas City area to introduce the state park system to the increasing Hispanic population in Missouri.
- Increase involvement with the Division of Tourism to develop a promotional campaign highlighting the state park system in the Kansas City area.
- Increase involvement with the Kansas City Convention and Visitors Bureau to highlight state parks and historic sites of the Kansas City area in their marketing publications.
- Increase involvement with Missouri Department of Transportation and Tourist Information Centers to promote the state park system and upgrade the exhibit and brochure distribution areas featuring state parks and historic sites.
- Increase involvement with metro-area radio, newspaper and TV stations to provide free information and feature articles about the state park system.

Objective 3

Increase programs provided to urban youth by developing and implementing a minimum of four new or enhanced program opportunities by January 2003.

Objective Measures

- Number of new or enhanced opportunities for urban youth
- Participation in new urban youth programs

Strategies

- Continue to work with the Missouri Parks Association, the Kansas City Parks Department and the Lakeside Nature Center to provide the Summer Camp Program in Kansas City whereby disadvantaged inner-city youth participate in summer outdoor experiences to develop outdoor skills and enjoy personal enrichment.
- Continue to cooperate with Bass Pro Shops, Missouri Department of Conservation and the U.S. Forest Service to offer the Wonders of the Outdoor World Program and the National Outdoor Recreation School at Roaring River State Park, working to expand the program to the St. Louis area (Babler or Meramec state parks) and the Kansas City area (Watkins Woolen Mill State Park) by January 2002.
- Promote environmental and resource education and advocacy by encouraging appropriate staff to be active in the Missouri Environmental Education Association promoting teacher awareness of how state park facilities can help students better understand Missouri's natural and cultural heritage and committing naturalist and historian staff time toward resource education programs at area schools and communities. Staff time devoted to these functions will be determined through the interpretive planning process.
- Collaborate with the Department's Environmental Education Unit within the Division of Environmental Quality's Technical Assistance Program to establish four new outreach opportunities for teachers and educators, directed toward environmental education and awareness of schoolchildren, at state park facilities located near St. Louis and Kansas City.

Objective 4

Increase hiking trail opportunities within the state park system by expanding primitive hiking trails from 397 miles to 412 miles by January 2003.

Objective Measure

Miles of primitive hiking trails in state parks

Strategies

- Formalize an agreement with the L-A-D Foundation concerning the development

of a trail system in the Roger Pryor Back Country Preserve in Pioneer Forest by July 2002.

- Complete the trail layout for Morris State Park (Crowley's Ridge) by July 2002.
- Complete the Conceptual Development Plan for Big Sugar Creek State Park with a major focus on trail development by July 2002.
- Investigate the connection of Goggins Mountain Trail in Johnson's Shut-Ins State Park to the Ozark Trail on USFS property at Bell Mountain Wilderness by July 2002.

Objective 5

Reduce the occurrence of cardiovascular disease as mirrored in the Department of Health's objectives by increasing outdoor recreation opportunities and participation through January 2005.

Objective Measure

Decreased percentage of chronic diseases (Show-Me Result data)

Strategies

- Continue to fund annually, 40 to 50 new outdoor recreation projects throughout Missouri through the Landmark Local Parks Program, National Recreational Trails Program and the Land and Water Conservation Fund through January 2005. Provide information and technical assistance to communities and citizens to ensure knowledge of grant availability and application procedures.
- Require all state and federal outdoor recreation grant applicants to include plans in their outdoor recreation project applications for educational programs to promote health benefits and use of outdoor recreation resources and environmental programs.
- Participate in promotional efforts by the Cardiovascular Health Advisory Board to encourage communities to develop and use outdoor recreation facilities.
- Continue to work with other natural resource providers to coordinate and distribute information on outdoor recreational resources and provide technical assistance to communities to foster ecotourism projects that encourage development and use of outdoor recreation opportunities.
- Continue efforts to extend the Katy Trail border-to-border from the Kansas state trail system into Illinois by January 2003. Seek acquisitions of existing railroad corridors for rail-to-trail conversion, or work with the railroad owners to provide a "rail-with-trail" opportunity where necessary.
** A "rail-with-trail" opportunity refers to a hiking or biking trail developed parallel to and within an active rail corridor but at a safe distance away from the track.*
- Increase participation in the Missouri State Park Passport Program bringing new users to the state park system and encouraging repeat users to visit different parks bringing total participation to 5000 participants or more by January 2005.

Outcome B

Enjoyment of Missouri's state park system

Outcome Measure

Overall percentage of visitor satisfaction with visits

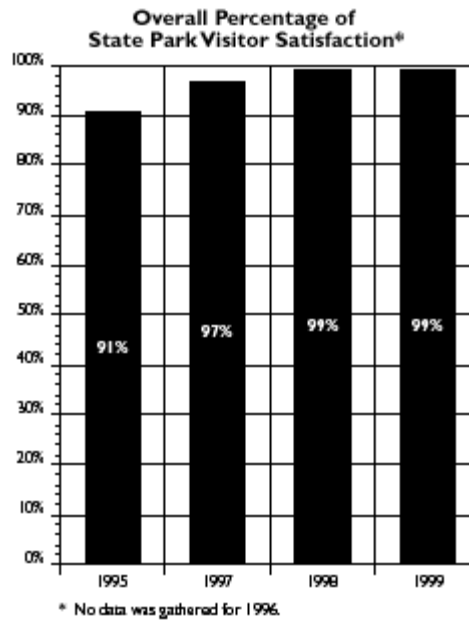
Objective 1

Sustain overall visitor satisfaction with facility operation and maintenance at the satisfied level* or higher in state parks through January 2005.

** Based on annual University of Missouri surveys using a scoring grid of 1- 4 with a score of 4 being "very satisfied."*

Objective Measure

Visitor satisfaction with facility operation and maintenance



Strategies

- Complete General Management Plans* for all facilities within the system and once completed, target 7 percent of the system's facilities per year for plan review clarifying the relationship of the threefold state-park mission to each facility and addressing recreational conflicts as part of this planning process through January 2005.

** General Management Plans are comprehensive planning documents developed for each park and site containing five individual chapters: the Interpretive Plan, the Natural and Cultural Resource Plans, the Conceptual Development Plan and the Operation Plan.*

- Reevaluate and update the 1992 Challenge of the '90s: Our Threatened State Parks to include collating the results of a survey questionnaire on the status and solutions to the system's documented threats, remedial actions taken and new threats perceived by January 2002.
- Increase by 10 percent annually the number of facilities actively managed through a cyclical repair and maintenance schedule intended to assess and remediate the park system's building and infrastructure needs; the program to include an inventory of buildings and structures and a prioritization of the system's infrastructure maintenance needs based on mission, visitor service and life-cycle analysis.
- Conduct general facility inspections in each state park and historic site two times per year to evaluate whether park staff is meeting routine maintenance and repair needs. Inspections are to be conducted by district supervisors and will determine if more detailed inspections or actions are necessary to address maintenance, safety, and environmental or ecological needs.
- Continue the upgrade of facilities to increase accessible use areas for the disabled per the Americans with Disabilities Act (ADA) by 10 percent annually through January 2005.
- Complete new signing plans* for 81 parks and historic sites and four district office locations by July 2005 with fabrication and installation of new signs according to these plans to be completed at the rate of six parks annually. Target complete installation for all facilities by July 2010.

** The new sign plan and design program will improve the information and directions provided to visitors by enhancing visibility, utilizing understandable and readable legends and verbiage. Signs will be attractive, durable and environmentally sound, utilizing quality, recyclable materials and biodegradable*

paints and stains.

- Develop an employee- and volunteer-recognition program for outstanding service, particularly as it relates to high-quality customer service by January 2002.
- Enhance and upgrade the state park's souvenir program by offering at least three new marketing strategies annually to provide a complete souvenir and merchandise program featuring enjoyable, memorable, upscale and educational merchandise through January 2005. Pursue more comprehensive souvenir retailing (i.e., park store concept) contingent on expansion approvals.
- Continue to develop a comprehensive and long-range program to comply with the building codes for public providers, adopting voluntary floodplain standards for state-owned facilities.

Objective 2

Increase participation in interpretive programming from 9 percent to 12 percent of park system guest visitation by January 2005.

Objective Measures

- Percentage of visitors participating in interpretive programs in comparison to total visitation
- Visitor satisfaction with state park interpretive programs

Strategies

- Continue to develop interpretive plans at each facility at a minimal rate of 7 percent of facilities per year until all facilities have plans. Once completed, plans will be updated on a cyclic schedule at the rate of 20 percent of all plans annually. Interpretive plans shall be included as part of the General Management Plan process.
- Provide workshops and events targeting teachers, including development of educational materials so teachers can reach more students with information about Missouri's state parks and environmental messages. Staff time devoted to these functions will be determined through the interpretive planning process.
- Reaffirm the division's commitment to resource interpretation through amphitheater programming, brochure publication, interpretive hikes and other similar activities.
- Participate in a statewide planning group to develop an interpretive plan for the Lewis and Clark Trail from the Ohio River to the confluence and up the Missouri River to include Sugar Loaf Rock and plans to handle an increase in Lewis and Clark tourism;
- Form a special task force to review interpretive themes with special attention to underrepresented or nonrepresented minority themes and how these could be used to develop Urban Heritage Parks. This review shall also be used to make recommendations to revise the system Expansion Plan by January 2003.
- Continue to develop interpretative training opportunities for park interpreters by expanding the scope of the Annual Interpretive Training School and by offering specialized training in interpretive philosophy and methods at other times during the year for other staff who provide natural and cultural resource interpretation.
- Encourage and support appropriate partnerships between the division's interpretive staff and the Environmental Education Unit of the Division of Environmental Quality's Technical Assistance Program, other agencies, schools and cooperating institutions to provide educational events in state parks and historic sites targeting user diversity such as Wonders of the Outdoor World, Partners in Environmental Education Programs and Ecology Days.

Objective 3

Decrease the average visitor accident or injury rate in state park facilities by 5 percent annually through January 2005.

Objective Measure

Annual visitor accident rate in state park facilities

Strategies

- Increase the emphasis on risk management with special focus on the health and safety of our park guests identifying and addressing park safety issues and working toward decreasing costs associated with Workers' Compensation and public-injury claims.
- Complete a standardized public-safety plan for each facility to direct risk management funding toward safety/risk issues identified as potentially life threatening or having the potential to cause serious physical injury by January 2003.
- Develop or assess park sign plans for all facilities and incorporate OSHA sign standards as outlined through the division's risk-management program for improving visitor awareness of natural risks in park settings by January 2005.
- Conduct comprehensive facility inspections using established industry safety and health guideline standards to increase employee awareness of physical safety and health hazards in the workplace inspecting each division facility at least once in every 24-month calendar period; deficiencies identified as life threatening or which could result in serious physical injury to be addressed by risk- management funding.
- Conduct a comprehensive inspection of each playground annually using the most current guidelines as given by the United States Consumer Product Safety Commission; deficiencies noted as life threatening to be repaired using risk-management funding.

Objective 4

Decrease the rate of crimes against persons and property (Show-Me Result) in state park facilities by 30 percent by 2005.

Objective Measures

- Crimes against persons as measured in state parks
- Crimes against property as measured in state parks

Strategies

- Develop an incident and arrest record retrieval system that will allow improved measurement of statistical trends, including crimes committed against people and property in state parks by January 2002.
- Review annually, crime statistics to ensure proper allocation and assignment of law enforcement personnel to include rangers and commissioned superintendent consistent with the division's statewide law enforcement strategy and deployment plan.
- Reduce the number of alcohol-related offenses through education and by conducting annual safety checkpoints in each Ranger Region (cooperative effort between State Park Rangers, Missouri Highway Patrol, Missouri Water Patrol, Missouri Department of Conservation, County Sheriff's Departments) to systematically ensure motorists are in compliance with state statutes. Each ranger to conduct at least two alcohol safety programs in DSP amphitheaters each summer and hand out brochures and other safety information in picnic areas and campgrounds.
- Further implement the tenets of community-oriented policing within state park facilities through the increased use of foot and bicycle patrols. Each ranger would conduct at least 40 hours of foot patrol and/or bicycle patrol in their assigned facility each month during the "on season" and endeavor to make at least 100 quality contacts with park visitors each month while conducting foot

and/or bicycle patrols. Increase the Ranger Program Bicycle Unit by 10 officers by July 2005.

- Continue to provide comprehensive training to noncommissioned field personnel annually, promoting efficient and legal response to potential and occurring enforcement incidents and practical information regarding what noncommissioned employees legally can and cannot do regarding various types of incidents.
- Provide training for commissioned personnel in the areas of natural and cultural resource awareness and management annually to enhance the understanding of the threats that may be posed by malicious and noncaring acts and viable legal remedies. Staff from the division's natural and cultural resource programs will provide guidance at in-service training to make commissioned employees aware of potential threats, problem trends and strategies.
- Continue to actively pursue state and federal grants to supplement law enforcement personnel, equipment and training.
- Develop and implement procedures to mobilize law enforcement teams swiftly and effectively to deal with specific law enforcement problems in state park facilities (e.g., methamphetamine labs) by July 2002. Conduct annually, a comprehensive review of crimes occurring in state parks and update and develop strategies to ensure adequate responses to these crimes.

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Missouri Department of Natural Resources

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Integrated Strategic Plan - October 1, 2000

Strategic Issue 5

Energy Use in Missouri

Each year Missourians consume almost 1,800 trillion British Thermal Units (Btus) of energy at a cost of more than \$11.5 billion. Much of this money leaves Missouri as more than 95 percent of the conventional fuels we consume come from outside the state. If all forms of conventional energy used – coal, electricity, natural gas, petroleum products, like gasoline and diesel fuel, and other fuels – were converted into a petroleum equivalent, our consumption would equal more than 310 million barrels of oil. That translates into each Missouri resident using an average of 57 barrels annually. To provide a sense of scale (based on Btu content), 57 barrels of oil can run 387 color televisions or 744 home computers for a year.

Energy use plays an integral role in Missouri's ability to improve economic prosperity. It also greatly influences the quality of our environment. When we use energy more efficiently, energy costs are reduced and the resulting savings can be used for other purposes. Lower energy use also reduces power plant emissions that are harmful to human health.

Energy operating costs

Greater efficiency should increase the dollars of products created for a given amount of energy. The data from 1992 through 1997 indicate that output per energy input has moved in a generally positive direction during the past few years. Increases in this ratio may also reflect simultaneous improvements in energy efficiency and shifts away from energy-intensive manufacturing industries. Dollars of gross state product per dollar spent for production, rather than energy use measured in Btus, show that output per energy expenditures fluctuated during the past few years. Energy expenditures also would be affected by energy prices. If prices decrease, the trend looks positive (greater efficiency); if energy prices increase, the trend looks worse.

Data from 1992 through 1997 indicate a mixed, but generally upward trend in energy use per capita in Missouri. An increase in this ratio probably means that Missouri citizens have become less efficient in their use of energy. The mixed pattern of increases and decreases may reflect countervailing trends for different uses, for example, improvements in appliance efficiency balanced by increased use of sport utility vehicles for personal travel. An increase could also mean a new energy-intensive technology such as personal computer use is introduced representing a change in the energy intensity of personal lifestyle rather than a change in the efficiency of energy technologies that were already in place.

Data from 1992 through 1995 indicate a generally downward trend in energy expenditures as percent of disposable personal income. This contrasts with the upward trend of per capita energy use noted above. The downward trends in expenditures as percentage of disposable personal income may reflect efficiency gains in some end uses but also probably reflect increased disposable income and falling energy prices, particularly gasoline and electricity prices during these years. This trend will be affected in future years due to the increasing prices and volatility of gasoline, electricity and other fuels.

State government energy expenditures

When state government uses energy more efficiently, its energy costs are reduced and the

resulting savings of taxpayer dollars can be used to cover other operating costs necessary to deliver goods and services to Missouri citizens. A decrease in the ratio of state energy expenditures to total operating expenditures could reflect greater energy efficiency by lowering energy's slice of total operating expenditures. Expenditure data indicates that the ratio of state energy expenditures to total operating expenditures has generally decreased in the past few years. This positive trend could reflect a combination of factors – genuine gains in operating efficiency, growth in total state operating expenditures and decreases in energy prices relative to the general price index.

In state buildings, the ratio of actual energy savings to potential savings indicate that much more can be done to further reduce state government's energy expenditures. By installing cost-effective measures, energy costs can be reduced an average of 25 percent.

Additional efficiencies can be attained in state vehicle fleets as well. Fleet efficiencies are required by statute to meet federal fuel-economy standards of 27.5 miles per gallon for passenger vehicles and 20.5 miles per gallon for light-duty vehicles. In 1999, Missouri's fleet of eligible vehicles stood at 24.4 miles per gallon for passenger vehicles and 16.1 miles per gallon for light-duty vehicles.

Diverse energy resources

Diversifying energy sources for electricity generation as well as for transportation will provide benefits to the nation and to Missouri by reducing our vulnerability to volatile oil markets, increasing the competitiveness and reliability of U.S. businesses and energy systems and improving the environment through less harmful energy production. Clean domestic energy choices for power generation, including solar, wind and biomass, can improve efficiencies and avoid costly expenditures on transmission and distribution equipment by siting these technologies close to the point of consumption.

In Missouri, fossil fuels represent approximately 93 percent of energy consumed; nationally, fossil fuels represent 85 percent. Nuclear represents 5 percent of the energy used in Missouri. Solar, wind and biomass sources of energy represented 1.1 percent in 1997. These statistics represent a decline from a high of 1.4 percent in 1995.

To diversify energy choices, public policies to remove market barriers, such as incentives for commercialization should be adopted. Like all emerging technologies, renewables lack infrastructure and their initial costs are often higher because of a lack of economies of scale.

Promote energy efficiency and diverse energy supplies to protect the environment

Outcome A

Decreased energy operating costs for Missouri's firms, farms, families and communities

Outcome Measures

- Industrial and commercial energy costs
- Personal residential energy use

Objective 1

Increase the weatherization of low-income households from 135,000 households to 141,000 households by fiscal year 2005.

Objective Measures

- Number of low-income homes weatherized
- Annual cost savings (million Btus)

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Integrated Strategic Plan - October 1, 2000

Strategic Issue 6

Effective DNR Operations

Assure that DNR's workforce and procurement choices mirror the diversity of Missouri

The Department of Natural Resources is an array of programs striving to protect and enhance our natural resources. This diversity of programs brings strength to the department and the opportunity to provide quality services in light of changing priorities, ongoing issues and new challenges. A diversity of staff brings strength to our decision making and actions.

America's workforce is changing. It is a workforce of individuals who bring different resources and perspectives to the workplace. The same is true of those who call Missouri home. DNR must deal with that change on an ongoing basis.

The department's focus is on enhancing the diversity of our staff and increasing purchases made from minority- and women- owned businesses. The department strives to increase the diversity of staff throughout DNR, with the desire to increase diversity in the upper salary ranges that are typically supervisory, managerial or specialized technical positions. To accomplish this, a comprehensive effort to encourage minority and female students to pursue degrees in the natural resource field to training throughout one's career must be undertaken.

To enhance diversity in Missouri's business community, DNR seeks to increase purchases from minority- and women-owned businesses. Efforts will be taken to identify what types of goods and services the department purchases, targeting our efforts to identify minority- and women-owned businesses that can provide those items and communicating that information both within the department and with other state agencies. Currently, 4.43 percent of DNR's purchases are from minority-owned businesses and 1.17 percent from women-owned businesses. DNR will aggressively strive to meet and exceed the targeted goals of 10 percent and 5 percent respectively.

Enhance DNR's ability to operate effectively and efficiently to address resource needs

The Department of Natural Resources has opportunities to collaborate and communicate with the many stakeholders involved in natural, energy and cultural resource use, protection and preservation. With sound, unbiased information and forums for exchange, we can increase our collaborative efforts with the public, the regulated community, various governmental agencies and others impacted by our actions. To accomplish this, the multitude of data collected by the department needs to be made more available in a variety of formats from traditional paper copies to the electronic media.

To provide excellent public service, DNR will focus on several operational areas. Facilities for our staff are not sufficient and the demand for our data, products and services is more than our current capability. To alleviate that need, the department will build a new office building that uses energy efficiency and environmentally sustainable building practices. The department envisions this building to be both a commitment to our mission and an opportunity for others to learn how to utilize environmentally protective construction. In addition, present DNR buildings will be

renovated.

To continuously improve our public service, DNR must provide career enhancement opportunities for all employees. DNR traditionally has a low turnover rate, which may change during the next several years with the new retirement options. To meet this challenge, the impact of these changes must be assessed, and new options developed.

Goal I

Assure that DNR's workforce and procurement choices mirror the diversity of Missouri

Outcome A

Increased representation of minorities and women in upper-level salary ranges in state government (Show-Me Result)

Outcome Measure

Statewide data of minorities and women earning more than \$40,000 per year

Objective

Increase minority and female representation for DNR

Objective Measure

Minority and female representation for DNR

Strategies

- Review DNR's work environment, selection and workforce development processes; determine where improvements are needed.
- Develop training programs for all personnel who participate on interview panels to improve the entire interview process, create a list of individuals who should participate on the panel to assure that diversity is represented and select employees to monitor the interview process to ensure that diversity considerations are institutionalized into the process.
- Address communications issues at the work-unit level that effect the potential for more productive activity and have a negative effect on increased diversity. Key skills to be targeted are: listening skills, conflict resolution, performance planning, team building.
- Enhance the diversity throughout the department, by aggressively recruiting minorities and women for the department, especially for underutilized positions. Continue to improve the working relationship with colleges and universities throughout Missouri to recruit recent graduates.
- Through workforce development opportunities such as training and mentoring, increase both the pool of applicants and successful competitors for all positions with focus in the upper 25 percent salary ranges.
- Consider interviews from open competitive merit class certificates for all vacancies in underutilized classes and inclusion of minorities and women on interview teams for those positions.
- Continue education efforts to help employees understand and value diversity, and effectively increase and retain diversity.
- Conduct analysis to determine the rate at which women and minorities are leaving the department and why. Track trends over time. Use analysis to set a benchmark from which to improve.
- Survey DNR staff regarding their feelings about diversity, expectations, benefits, fairness and affirmative action goals. Also, survey exiting employees prior to departure to determine parting feelings about DNR's diversity achievements (or lack of).
- Continue to communicate to staff the benefits of diversity and inclusionary

policies and train all supervisors in management practices designed to support diversity objectives.

Outcome B

Increased representation of minorities and women in state purchasing (Show-Me Result)

Outcome Measure

Percent of purchases from Minority and Women Business Enterprises (statewide)

Objective

Increase the percentage of DNR total dollars in purchases from Minority and Women Business Enterprises by 2003 as follows:

- Minority Business Enterprises: from 4.43 percent to 10 percent.
- Women Business Enterprises: from 1.17 percent to 5 percent.

Objective Measure

Percent of purchases from Minority Business Enterprises and Women Business Enterprises for DNR

Strategies

- Identify what types of goods and services comprise the majority of the division's purchases. Then target efforts to locate, register and utilize minority and women vendors for these products and services. DNR's Contracting and Compliance Team will facilitate this effort and share the results with the Office of Administration, Division of Purchasing and Materials Management.
- Develop divisional procurement plans to assign goals at or above agency goals. Each division is responsible to assign appropriate goals to its purchases based on a thorough analysis of certified/registered firms as prime contractors, sub-contractors and suppliers. Assessment of progress will be part of each division director's performance expectations.
- Provide training to staff in the implementation of Minority and Women Business Enterprises' procurement goals. Develop a program to recognize outstanding contributions or achievements made to staff.
- Increase the minority vendors list through the identification of potential contracting
- Develop standard solicitation language and use in all bid documents in excess of \$25,000.
- Maximize the use of its discretionary purchasing authorization for goods and services costing less than \$3,000 to increase purchases from Minority and Women Enterprises.
- Develop a Minority and Women Enterprises brochure and page on the DNR Web site to increase awareness.

Goal II

Enhance DNR's ability to operate effectively and efficiently to address resource

Outcome

needs

Public service

Outcome Measure

Efficient and effective public service is the cornerstone to the operation of the department and attainment of its mission. Being operational, there is no measure for this outcome.

Objective 1

Increase access to all DNR information, products and services.

Strategies

- Prioritize application and use of spatial data such as Geographic Information System technology as a basic means of data collection, dissemination and analysis.
- Enhance DNR's Web site to include Web-enabled applications and e-business applications so that staff and the public have better, quicker access to our products and services. Continuously evaluate current efforts to make the department accessible through all information sources.
- Implement a program to use the Internet and departmental home page as a source for citizens and employees to monitor and comment on the progress of our work (outcomes measures), planning and policy development efforts to include the strategic plan, state parks conceptual development plans and policies.
- Collect and manage Missouri-specific energy data and provide user-friendly access through electronic and printed reports.
- Revisit the Information Strategic Plan to update progress and make further recommendations.
- Continuously evaluate DNR's outreach efforts, such as State Fair and Earth Day, to ensure they improve access to DNR's information, products and services and are reaching the people we need to reach.

Objective 2

Provide adequate facilities for the public and work environment for all DNR staff.

Strategies

- Provide technical assistance and guidance for the design and construction of the DNR Green Building to demonstrate energy efficiency, renewable energy, and sustainable processes to state agencies and the general public.
- Provide technical assistance to DNR facility operators to identify and implement energy efficiency and renewable energy measures through the Energy Efficiency in State Government Facilities Program, to achieve the benefits of an improved work environment for state employees.
- Renovate the facilities housing the Division of Geology and Land Survey to provide for an adequate, uniform staff work environment and to decrease inefficiencies in operations inherent in an older structure.
- Continue relocation of DNR staff from the Jefferson Building to the DNR Green Building, and other locations if needed, to meet work environment needs for all DNR staff in the Jefferson City area.
- Maintain annual funding for the replacement of worn or unsafe state park equipment while continuing to develop an equipment life-cycle replacement system requesting annual expansion equipment when necessary for infrastructure support, maintenance or public service enhancements.
- Continue to develop a Missouri state park foundation with a broad-based membership and board to enhance citizen interaction and the division's ability to provide creative programs and services.
- Facilitate an Environmental Management System as a pilot project between the divisions of Environmental Quality and State Parks as a proactive formalized approach to environmental compliance for water, air and land resources by January 2003.

Objective 3

Enhance employees' ability to provide excellent customer service.

Strategies

- Utilize components of the department's and divisional strategic plans as a portion of performance planning and appraisals.
- Assess the impact of changes in DNR's and Missouri's workforce and determine the implications on the department's ability to provide the quality products and services. Through this effort, develop a program that provides staff with opportunities to grow their skills and enhance their experience.
- Coordinate with the Office of Administration to review and update the training offer to DNR managers to better reflect individuals' needs and experience.

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